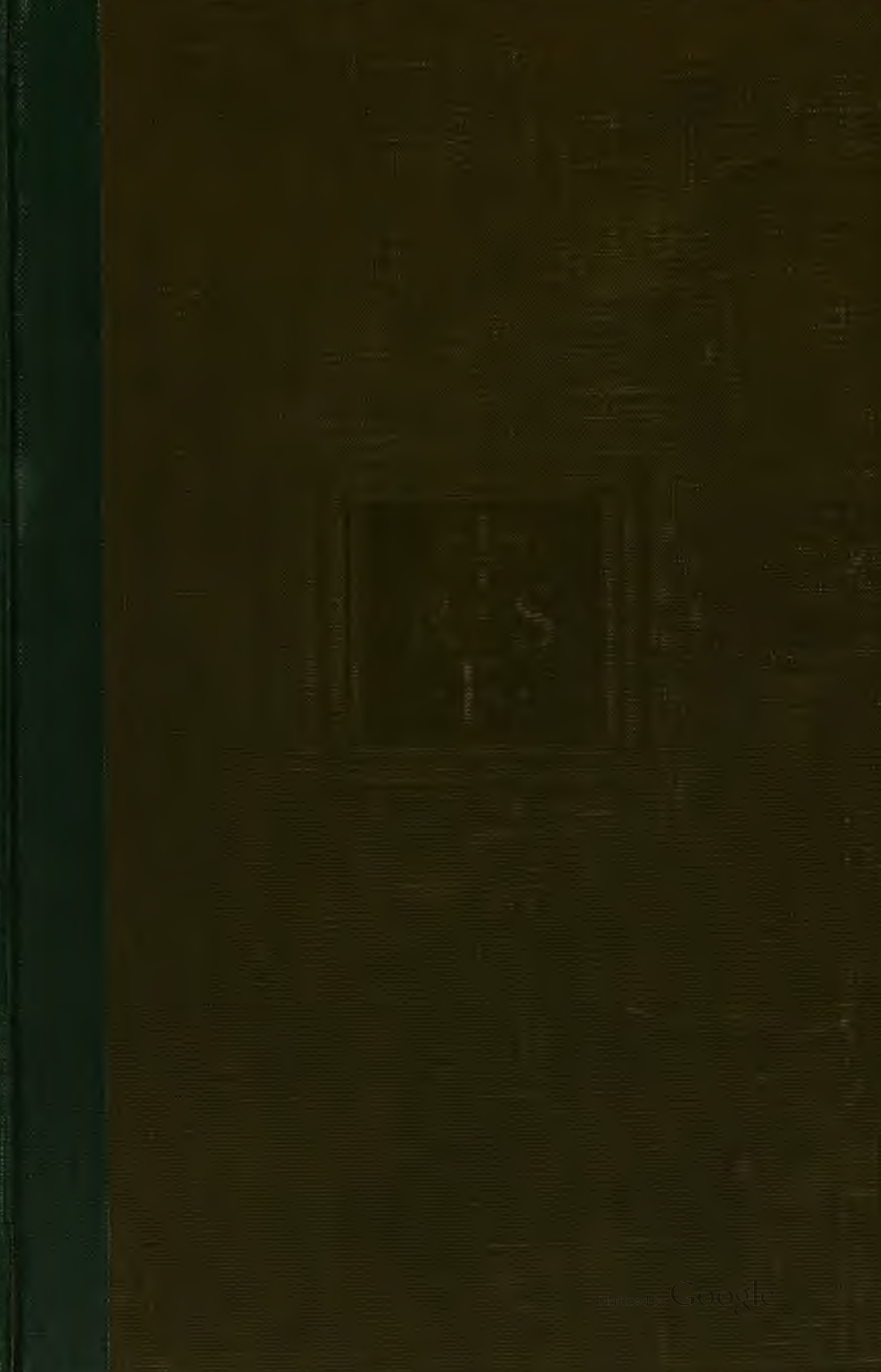

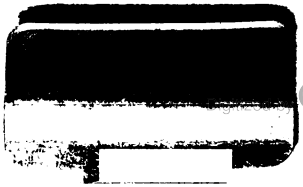

LAGGARDS IN OUR SCHOOLS

RUSSELL SAGE FOUNDATION

LAGGARDS IN OUR SCHOOLS

A STUDY OF RETARDATION AND ELIMINATION IN CITY SCHOOL SYSTEMS

BY

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NEW YORK
CHARITIES PUBLICATION COMMITTEE . . . . MCMIX

PRESS OF WM. F. FELL CO.
PHILADELPHIA.

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INTRODUCTION

DURING the past decade it has been increasingly realized that the education of children who are defective in body, mind, or morals is a matter of great importance to the future of the state. Extensive studies carried on in Great Britain have shown an alarming amount of degeneration. Definite and extensive steps looking toward the care of defective children have been taken in many civilized countries; but the crux of the matter does not lie in the care of these unfortunates. At most they do not constitute more than from one to two per cent of the school population, and it does not appear that any considerable fraction of them can ever be educated so as to become independent members of the community.

The great problem lies in the very much larger class of those who, while they are not defective, do not keep up with their fellows. These, constituting from five to fifty per cent of our school population, can become either failures or successes in life, according to the influences that are brought to bear upon them during their early years.

About this large group we need facts. Are they in their present condition largely because of removable physical disabilities, such as hypertrophied tonsils or adenoids, defective vision or hearing, or malnutrition? Do they drop behind in their school life because of illness? Are they behind because of late entrance into the schools? To what extent is irregularity of attendance a factor in delayed progress? Is compulsory labor after school hours an important factor? When do they drop out of school, and for what reasons? Are there any schools that succeed in educating an appreciably larger per cent of these children than do others? If so, how is it done?

Data with which to answer these questions were not in existence. Application was therefore made to the Russell Sage

Foundation for a modest grant with which to make a preliminary survey that might

(1) Put together useful material bearing on these topics;

(2) Develop a mode of attack on the problem;

(3) Analyze a sufficiently large number of cases to demonstrate the utility of the method and give answers of at least a provisional nature to some of the questions.

The grant was allowed in the fall of 1907.

The matter was also laid before Dr. William H. Maxwell, Superintendent of Schools of New York City, who has given the fullest possible coöperation, as well as allowed access to schools and to school records, without which the investigation could not have been made.

The next step consisted in the discovery of some one who could conduct the investigation. To do work of the sort contemplated satisfactorily is a most difficult matter, for it involves a technical knowledge of how to handle statistical material so as to avoid the many pitfalls presented, and at the same time get results that shall be trustworthy and constructive. It also involves extensive experience in school administration and the widest possible knowledge of the literature bearing on these subjects. We were exceedingly fortunate in securing Mr. Leonard P. Ayres, formerly General Superintendent of Schools for Porto Rico, and Chief of the Division of Statistics of the Insular Department of Education.

In connection with the investigation it was necessary to secure as complete records as possible of medical inspection of school children. The material secured seemed sufficiently valuable to warrant its publication. Accordingly it was embodied in a preliminary report* and published in 1908.

Grateful recognition is due Dr. Roland P. Falkner, who has given the work of the investigation from its inception the great assistance of his keen insight into methods of social investigation and of his thorough knowledge of educational statistics.

A report of the study, in so far as it related to the New York

*"Medical Inspection of Schools," by Gulick and Ayres. New York, 1908. Published by Charities Publication Committee, for the Russell Sage Foundation.

schools, was submitted to Dr. William H. Maxwell and published by him as a part of his annual report for 1908. Besides this partial publication of the findings, many of the chapters have appeared in part or in whole as contributions to the educational press over the signature of Mr. Ayres.

The most significant of the findings of the investigation are:

(1) That the most important causes of retardation of school children can be removed;

(2) That the old-fashioned virtues of regularity of attendance and faithfulness are major elements of success;

(3) That some cities are already accomplishing excellent results by measures that can be adopted by all;

(4) That relatively few children are so defective as to prevent success in school or in life.

LUTHER H. GULICK,
Chairman, Backward Children Investigation.

CHAPTER I

THE BACKWARD CHILDREN INVESTIGATION

IN his report for 1904 Dr. William H. Maxwell, City Superintendent of Schools of New York, called attention to the fact that a large number of pupils (39 per cent in the elementary grades) were shown by his tables to be above the normal age for the grades they were in. In each annual report since then he has regularly published similar tables. Concerning the condition thus disclosed there has been much discussion, and more than one school evil has been unhesitatingly labeled a consequence of "retardation," as the circumstance of mal-adjustment between the ages and grades of school children came to be termed.

Many causes were assigned in explanation of the conditions revealed. Among these some of the more prominent were the constant influx of non-English speaking children, the enrolling of children in the first grade at a comparatively advanced age, the slow progress of children on account of physical defects or weaknesses, inefficient teaching, unsuitable courses of study, and the shifting of children from school to school by reason of the frequent changes of residence of their families.

Briefly sketched this was the condition in regard to the problem of backwardness or retardation among school children in New York City in the fall of 1907. Dr. Maxwell was not the only superintendent who had called attention to the matter, but his tables had revealed the conditions with a new force and definiteness and focused the interest of educators on the problem. Whether the causes commonly assigned were all the causes or the most important of them—and if they were, which among them predominated in weight—no one knew. No adequate investigation to determine the answers to these questions had ever been made.

The importance of the problem, its evidently close bearing on the question of the adaptation of the school to the needs of the child, and the marked lack of definite information bearing on the question were the forces which impelled the Russell Sage Foundation to undertake in the fall of 1907 an investigation into some phases of "the adaptability of the school and its grades to children."

The object of the investigation was to study the problem of the progress of school children through the grades. Its interest was not in the individual, sub-normal, or atypical child but rather in that large class, varying with local conditions from 5 to 75 per cent of all the children in our schools, who are older than they should be for the grades they are in. The questions the investigation set itself to answer were these: How many of the children in our schools fail to make normal progress from grade to grade and why do they fail? How many of the children drop out of school before finishing the elementary course and why do they drop out? What are the facts and what are the remedies?

Work was begun by making an intensive study of the school records of the pupils in one school in New York. The object was to outline the problems along definite lines, to test methods and to develop a system for more extensive work. While this preliminary study was under way it became necessary to turn aside temporarily from the purely local work to discover what was being done for children in different cities and countries along lines only partly allied to traditional school work.

As a result of this study a volume was written on the Medical Inspection of Schools and the accumulated information in this field placed at the disposition of school workers. The investigation was then continued along the lines first mapped out.

In the spring of 1908 a detailed investigation of the school records of 20,000 children in fifteen schools in Manhattan was undertaken. The children were about equally divided between the two sexes and represented a varying range of social and racial classes. The study consisted of an intensive and critical study of the personal and school records of the children and of the records of the physical examinations which had been given to many of them by the physicians of the Board of Health.

While this study was being carried on and ever since its conclusion the available records of school conditions in most of the larger cities of the country were being subjected to searching analysis and comparison.

The results of all of this work combine to form the present volume which is a report of the findings of the Backward Children Investigation. The volume draws its material from the New York Investigation, from the collated material which contributed to the volume "Medical Inspection of Schools" and from the study of the school reports of a large number of American cities.

The findings of the investigation and their lessons may be briefly outlined under the three headings: Conditions, Causes, and Remedies.

CONDITIONS

In every school there are found some children who are older than they should be for the grades they are in. These children constitute serious problems for the teachers. They are misfits in the classes, require special attention if they are to do satisfactory work and render more difficult the work with the other children. These children are known as over-age or retarded children. They are found in all school systems but are by no means equally common in all systems. In this regard there is an enormous variability among cities. In Medford, Massachusetts, only 7 per cent of the children are retarded according to the standard adopted, while in Memphis, Tennessee, among the colored children 75 per cent are retarded. All of the other cities studied fall between these two extremes. On the average about 33 per cent of all of the pupils in our public schools belong to the class "retarded." This gives an idea of the magnitude of the problem with which we are dealing. It is not at all a problem concerning a few under-developed or feeble minded children. It is one affecting most intimately perhaps 6,000,000 children in the United States.

Wherever we find that the retarded children constitute a large part of all of the school membership we find that many of the children do not stay in the schools until they complete the elementary course. Children who are backward in their studies

and reach the age of fourteen (which is generally the end of the compulsory attendance period) when they are in the fifth or sixth grade instead of in the eighth, rarely stay to graduate. They drop out without finishing. The educational importance of this fact is great. We are apt to think of the common school course as representing the least amount of schooling that should be permitted to anyone, but the fact remains that a large part of all of our children are not completing it. As retardation is a condition affecting all of our schools to some extent, so too elimination, or the falling out of pupils before completing the course, is an evil found everywhere but varying greatly in degree in different localities. In Quincy, Massachusetts, of every hundred children who start in the first grade eighty-two continue to the final grade. In Camden, New Jersey, of every hundred who start only seventeen finish. The other eighty-three fall by the wayside. The general tendency of American cities is to carry all of their children through the fifth grade, to take one-half of them to the eighth grade and one in ten through the high school.

In the current discussion of retardation two claims have repeatedly been put forward by those who seek to show that retardation is not a serious matter and that in any event the responsibility of the school for existing conditions is small. These claims are, first, that if we find many over-age children in the schools it is because they enter at comparatively advanced ages; and secondly, that even if some children do progress slowly they are in a measure offset by an equal or greater number who make rapid progress.

Our studies have thrown light on both of these contentions. The children who are retarded on account of late entrance are found to be only a small part of all of the retarded children. In New York City where children enter school on the average later than they do in many other cities, the retarded children whose backwardness is due to late entrance are found to constitute less than one-third of all. Since retardation is ascribable to only two conditions, late entrance and slow progress, and since late entrance is found to be only a small factor, slow progress, however caused, is proved to be the great factor in bringing about the existing condition.

The contention that the children who make slow progress are in a measure counterbalanced by a substantially equal number who make rapid progress is found to rest on an even slighter basis of fact. Taking the average of the conditions found in our city schools the figures show that for every child who is making more than normally rapid progress there are from eight to ten children making abnormally slow progress. In the lower grades, before the process of elimination enters to remove the badly retarded children, the average progress of the pupils is at the rate of eight grades in ten years. *These conditions mean that our courses of study as at present constituted are fitted not to the slow child or to the average child but to the unusually bright one.*

If the lower grades of our schools contain many children who are not going ahead at the normal rate, this means that there are large numbers of pupils who are doing the work of the grades they are in for the second or third time. These children are repeaters. The study of the figures from different cities reveals the importance of this class from both the educational and economic view points. The computations show that in the schools of Somerville a little more than 6 per cent of the children are repeaters. From this figure the records of the cities range upwards until we reach Camden, New Jersey, with 30 per cent of the children in the repeating class. The average percentage is a little over 16. This means that in the country as a whole about one-sixth of all of the children are repeating and we are annually spending about $27,000,000 in this wasteful process of repetition in our cities alone.

CAUSES

When we seek to analyze the causes which are responsible for the conditions which have been discussed we find the field a difficult one. There is no one cause for retardation nor can we say that any one cause is preponderant. Late entrance is a potent factor, irregular attendance is another. In both cases time lost through illness plays an important part. Certain physical defects are responsible for a part of the backwardness. On the basis of the investigation conducted in New York we can say that in general children suffering from the physical defects

which are recorded in that city by the school physicians make nearly 9 per cent slower progress than do the children who are found on examination to have no defects. Children having some sorts of defects, adenoids for instance, are retarded still more.

The study of the bearing of nationality on school progress has been fruitful. In general there is little relation between the percentage of foreigners in the different cities and the amount of retardation found in their schools. Some of our most foreign cities make very good records, while in some of our most American cities school conditions are very bad indeed. In the country as a whole there are more illiterates proportionately among native whites of native parents than among native whites of foreign parents and school attendance is more general among the latter than among the former.

In the New York investigation it was shown that there are decided differences between the different races in the matter of school progress. There the Germans made the best records, followed by Americans, Russians, English, Irish and Italians in that order. Everywhere that investigations have been made it has been conclusively shown that ignorance of the English language is a handicap that is quickly and easily overcome and has little influence on retardation.

Several other branches of the investigation have brought to light conditions of great educational importance, as for instance an inquiry into the effects of different rates of promotion on the number of times the average child fails during his course, which demonstrated that we are training our children well in failure.

Another point on which important facts have been secured is the old question as to whether the child who enters school at say the age of eight or nine makes more rapid or slower progress than the one who enters at the age of five.

Perhaps no more important set of facts has been brought to light than those relating to the relative standing of the two sexes. We have always known that fewer boys than girls go to the high school but we have not before known that there is 13 per cent more retardation among boys than among girls and 13 per cent more repeaters among boys than among girls, or that the percentage of girls who complete the common school course

is 17 per cent greater than the percentage of boys. *These facts mean that our schools as at present constituted are far better fitted to the needs of the girls than they are to those of the boys.*

There is another thing that has been proved; namely, that these conditions which have been discussed are neither of recent origin nor are they growing worse. Conditions are slowly improving in most places but not in all and not rapidly. They are not improving so rapidly that we have any grounds for feeling that if let alone they will care for themselves.

REMEDIES

The possible remedies for the conditions which have been discussed may be divided into two classes, legislative and administrative.

If children are to progress regularly through the grades they must be present in the schools. This means that we must have better compulsory attendance laws and better provision for their enforcement. If we are to enforce the attendance laws we must know where the children of school age are. Therefore, we must have better laws for taking the school census and better methods for utilizing the returns. If we are to have all of our children complete the common school course we must have an agreement which is now commonly lacking between the length of the school course and the length of the compulsory attendance period. It is a curious anomaly that we commonly have school courses eight or nine years in length and compel attendance for six years only.

The administrative reforms which must be brought about consist mainly of more thorough and better medical inspection, courses of study which will more nearly fit the abilities of the average pupil, more flexible grading, and, most important of all, a better knowledge of the facts. We must have better school records and we must learn to interpret them more intelligently. It is far from creditable that in hardly a city in the country can the school authorities tell how many pupils begin school each year, or how fast they advance, or what proportion finish or why they fall out, or where and why they lose time.

CHAPTER II

THE PROBLEMS OF RETARDATION AND ELIMINATION AND THEIR SIGNIFICANCE

NO standard which may be applied to a school system as a measure of accomplishment is more significant than that which tells us what proportion of the pupils who enter the first grade succeed in reaching the final grade. It is this that gives the problem of the elimination of pupils from school and the cognate matter of retardation their educational importance.

In our city school systems most of the children enter the first grade at the age of six or seven. Some of them are promoted each year and reach the eighth grade at fourteen or fifteen years of age. Others are not regularly promoted from grade to grade. They fall behind and at the age of fourteen they find themselves, not in the eighth grade, but in the fifth or sixth. This falling back process is termed *retardation.*

The retarded pupil finds himself in the same class with much younger companions. His age and size are a continual reproach to him. He begins to resent the maternalistic atmosphere of the lower grammer grades. He becomes discouraged through his lack of success and, when he has passed the compulsory attendance age, he leaves school. This dropping out process is termed *elimination.* It is with these two processes—retardation and elimination—that this volume has to deal.

The term retardation has been explained as referring to the pupil who is above the normal age for his grade. It will be so employed throughout this book, irrespective of how the pupil in question happens to be above normal age. The explanation may be that he has progressed slowly. It may be on the other hand that he entered school late and has never caught up with the other pupils of his own age. In either event he constitutes a serious problem for himself and for the school authorities,

and falls within the class "retarded." As it is employed in this work the term expresses a condition, not a process or an explanation.

We have always known that in our general educational system, the high schools occupy a somewhat privileged position, in that they deal with selected and not with average pupils. Few of the pupils of the common schools continue their work until they reach this institution of secondary instruction. But we have not known, or if we have known, we have failed to realize it, that large numbers of the children who enter the public schools never complete the work of the common schools. So far from completing it they drop out, often with no more progress than is represented by four or five years of the grades. Perhaps this does not mean that our public school system is any worse than it used to be, but on the face of it it certainly does mean that the system is not nearly so good as it should be.

The significance of the problem is attested by the utterances of educators of national prominence like Commissioner Andrew S. Draper of New York state and students of such distinction as Professor Edward L. Thorndike of Teachers College of Columbia University. In his report published in 1908, Dr. Draper says:

"I have assumed that practically all of the children who do not go to the high schools do finish the elementary schools. That is not the fact. * * * * * I confess that it startles me to find that certainly not more than two-fifths and undoubtedly not more than a third of the children who enter our elementary schools ever finish them, and that not more than one-half of them go beyond the fifth or sixth grade."*

In the bulletin issued by the Bureau of Education in February, 1908, Prof. Thorndike states the following conclusions:

"At least 25 out of 100 children of the white population of our country who enter school stay only long enough to learn to read simple English, write such words as they commonly use, and perform the four operations for integers without serious errors. A fifth of the children (white) entering city schools stay only to the fifth grade."†

* Report, 1906, p. 532.

† "The Elimination of Pupils from School," p. 9.

While as measures of the amount of the evil considered, the conclusions of Dr. Thorndike have been vigorously assailed and those of Dr. Draper have not been universally accepted, there is no difference of opinion as to the gravity of the evil. This much is clear—many pupils leave school at a relatively low point in the school system. This point differs greatly in different cities but the condition nevertheless exists in all of them.

The reasons for this elimination, which has attracted so much attention among educators, are not far to seek. Our public school system is commonly based on eight years' work, or eight grades. With few exceptions, wherever compulsory attendance laws exist school attendance becomes optional at the age of fourteen, and this age corresponds—at least approximately—with the physical and psychological changes in the child's life.

We have here the condition under which elimination arises. Children very commonly avail themselves of the privilege of leaving school at fourteen. For a large part of all of the children, therefore, the question as to how much schooling they will receive is the question how much they can obtain before they reach the age of fourteen. In years, this obviously depends upon the age at which they enter school. In progress, it depends upon the rate at which they go forward during the years they are in attendance.

Information as to age at entering and age at leaving may be gained from a study of Diagram I which shows in relative figures the distribution by age groups of 1,982,477 children enrolled in the elementary and high schools of fifty-eight cities. The ten year old children are represented as being 100. Using this as a basis the other age groups are represented proportionally.

There is little difference in size between the seven age groups at the ages from seven to thirteen inclusive. During these ages, going to school is the customary occupation of practically all of the children of our cities. But one-fourth of them have not yet started at the age of six and two out of every five have already left at the age of fourteen. A considerable number even anticipate the age of fourteen and leave at thirteen years. Now, since there are only six years (those from seven to twelve inclusive) during which

practically all of the children are in school, and, if we add the age of thirteen, only seven years when nearly all of them are in attendance, it becomes obvious why they cannot all receive eight years of schooling.

When we consider that only those children who enter at six years of age can complete the eight elementary grades by regular progress before they reach the age of fourteen, we can better understand why it is that so few finish the elementary schools. No more than a man by taking thought can add one cubit to his stature can a child squeeze in more than eight years between his

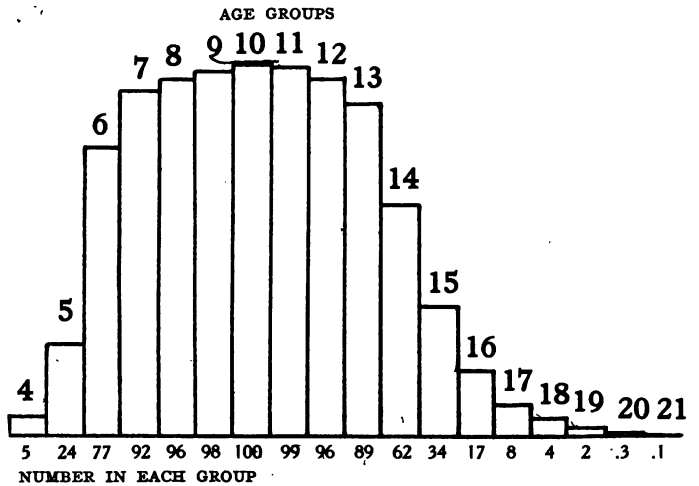

Diagram I.—Distribution by ages of children in city school systems. The ten year old children are here represented as one hundred; the other age groups are proportional.

sixth and fourteenth birthdays. When we further consider that in no state are children compelled to go to school until they are seven years of age, it is manifest that no child going to school under such compulsion, and leaving upon reaching the age of fourteen, can ever, by normal progress, finish the eight grade course prescribed by school authorities. Is it then surprising that so few pupils can finish the elementary school course? And if the elementary schools represent a unit in education, is it not singular that our laws do not generally enforce this unit?

But after all, how many pupils do pass through the schools regularly advancing from year to year as the course prescribes? Such regular progress we call normal advance, but when we examine facts we find that here normal and average are far apart. Failure, so far from being abnormal is, judged by the standard of frequency, rather the rule than the exception. There are few children who pass through the schools without losing a term, a year, or more in the course of their studies. They may not be wholly to blame for it; sickness or change of residence may account for it in part. But whether so caused or whether it is the result of indifference or inattention, the effect is the same so far as lengthening the whole time spent in school or hindering the progress which can be made in a given number of years is concerned. The promotion figures in our schools show that every grade brings its quota of failures, and it can be readily understood that after two or three grades have been passed these numbers are accumulated; and further, that in the upper grades few remain who have not some time or other in their previous school history a failure to their credit or discredit.

In connection with our consideration of the very general rule of dropping out of school at fourteen, the influence of this failure to advance regularly is plain. It means that at the age of fourteen few pupils have reached the grade corresponding to the number of years since they entered school. Most of them are in a lower grade, and consequently, if they drop out of school at the age of fourteen, they leave with an education far less complete than they might have been expected to attain. Hence it is that pupils may drop out of school in no inconsiderable numbers in the fourth and fifth grades with the most fragmentary education as their equipment for the work of life.

No minute analysis of the figures showing the membership of the grades is necessary to convince even the casual student of the problem that this dropping out process is serious in its effects and far reaching in extent. This may be learned from a mere inspection of figures. In the Report of the Commissioner of Education for 1907 are tables showing the grade distribution in 386 cities of 8000 population and upwards. The aggregate figures, omitting the ninth grade, are as follows:

TABLE I.—AGGREGATE GRADE DISTRIBUTION IN 386 CITIES.

Grade	*Pupils*
Kindergarten	114,059
First Grade	447,845
Second Grade	324,107
Third Grade	310,287
Fourth Grade	286,705
Fifth Grade	247,465
Sixth Grade	207,095
Seventh Grade	165,047
Eighth Grade	117,978
HIGH SCHOOL	
First Year	84,664
Second Year	55,268
Third Year	36,402
Fourth Year	25,066
Total	2,421,988

If we consider the pupils in the first grade as being represented by 1000 pupils and represent the following grades by proportional numbers, we may construct a diagram in which the upright columns represent the membership of the successive grades:

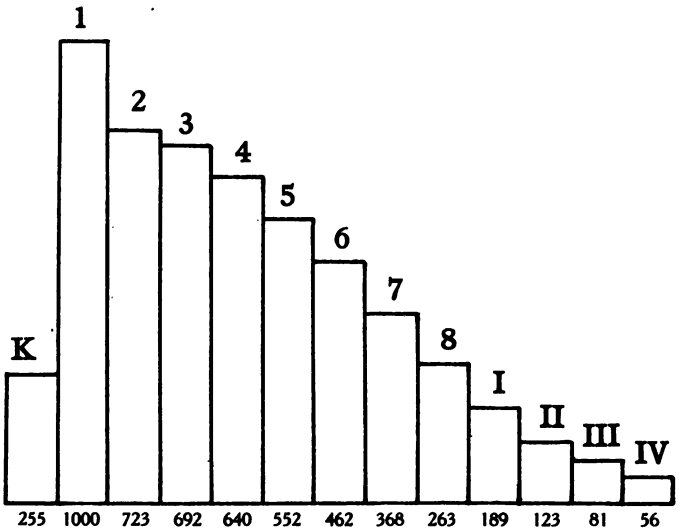

Diagram II.—Grade distribution in 386 cities on the basis of 1000 children in the first grade. The eight grades are designated by the figures 1 to 8, the kindergarten by K and the high school classes by Roman numerals I to IV.

For each 1000 pupils in the first grade we find only 263 in the eighth and only 56 in the fourth year of the high school. These figures represent average conditions in our city schools.

It is not possible to compute from these figures how many children succeed in reaching each grade, or what proportion of the children drop out in each, for the children in the first grade are not all beginners. Some of them are repeaters who have been there two or three years. Nevertheless, the diagram shows convincingly that many children drop out of school in the upper grades, that comparatively few reach the eighth grade, and that very few indeed complete the high school course.

These conditions are far from being uniform in different sections of the country. Different cities furnish data of the most widely varying character. Even state systems exhibit marked individuality. This is shown by comparing the grade distributions in the three states for which the report of the United States Commissioner for 1907 furnishes complete data.

In North Carolina the grade distribution was as follows:

TABLE 2.—GRADE DISTRIBUTION IN NORTH CAROLINA IN 1906.

Grade	*Pupils*
First Grade	140,742
Second Grade	85,598
Third Grade	74,710
Fourth Grade	67,743
Fifth Grade	50,684
Sixth Grade	35,664
Seventh Grade	19,611
HIGH SCHOOL	
First Year	5,155
Second Year	2,123
Third Year	876
Fourth Year	274
Total	483,180

Expressing the first grade by 1000 as before, and the following grades by relative figures, we may illustrate this in graphic form as shown in Diagram III.

Conditions are somewhat different in Tennessee. With more pupils in the first three grammar grades and with a greater total enrollment, the schools of this state carry fewer pupils to the higher

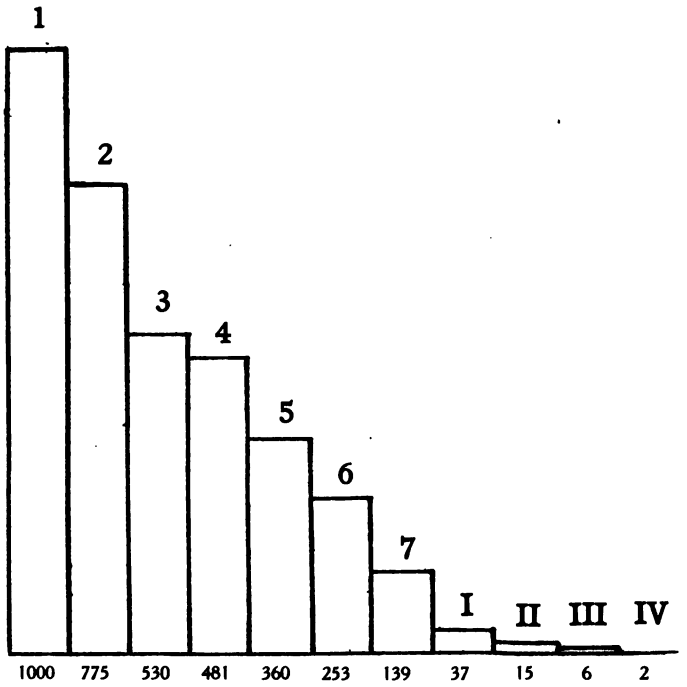

Diagram III.—Grades and High Schools in North Carolina.

grammar grades and to the high school. The grade distribution and its expression in graphic form follow:

TABLE 3.—GRADE DISTRIBUTION IN TENNESSEE IN 1906.

Grade	*Pupils*
First Grade	149,656
Second Grade	86,380
Third Grade	75,328
Fourth Grade	74,149
Fifth Grade	61,469
Sixth Grade	23,372
Seventh Grade	14,775
Eighth Grade	10,697
HIGH SCHOOL	
First Year	2,533
Second Year	1,222
Third Year	575
Total	500,156

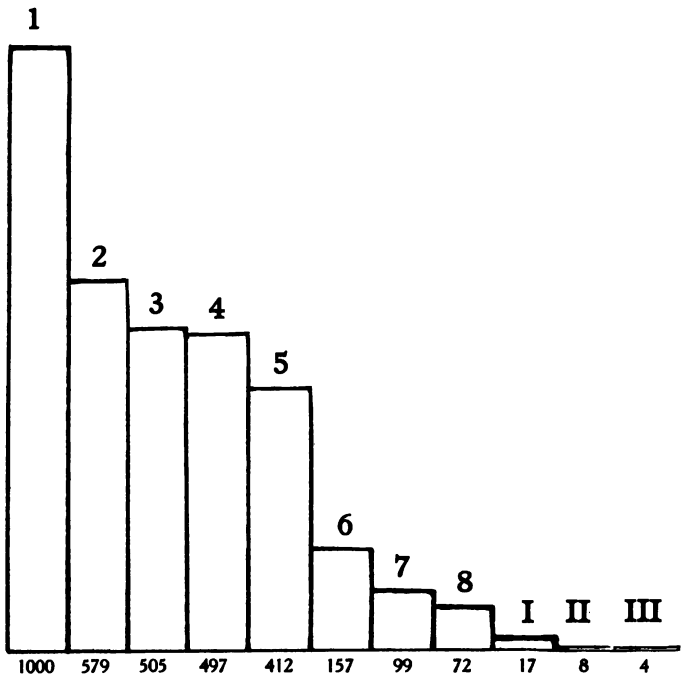

Diagram IV.—Grades and High Schools in Tennessee.

In decided contrast to conditions in these two states are those in Utah as shown in the table and in Diagram V.

TABLE 4.—GRADE DISTRIBUTION IN UTAH IN 1906.

Grade	*Pupils*
First Grade	10,991
Second Grade	8,961
Third Grade	9,362
Fourth Grade	9,431
Fifth Grade	8,019
Sixth Grade	7,117
Seventh Grade	6,056
Eighth Grade	4,742
HIGH SCHOOL.	
First Year	967
Second Year	352
Third Year	201
Fourth Year	140
Total	66,339

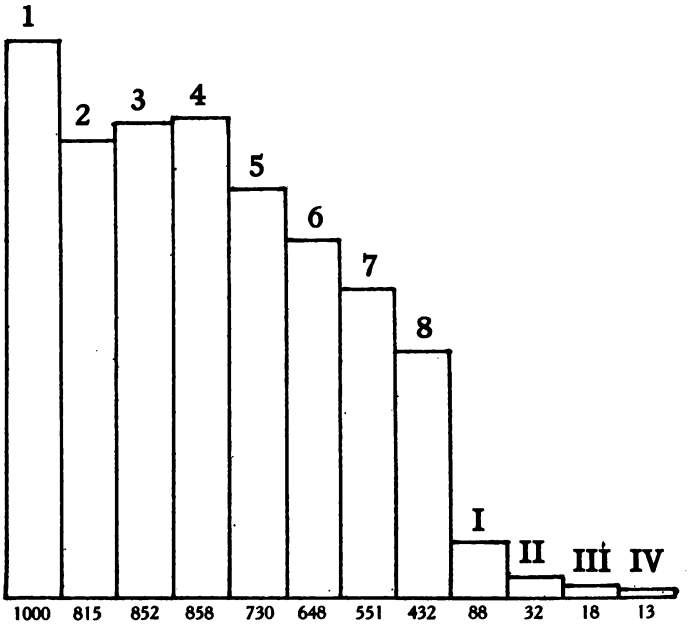

Diagram V.—Grades and High Schools in Utah.

The pupils in the final grammar grade in North Carolina are only 14 per cent of the number in the first grade. In the case of Tennessee the per cent is 7.2. In Utah, the number of eighth grade pupils is 43 per cent of the first grade ones. These illustrations will suffice to show how conditions vary in different localities.

No attempt has been made to treat the problem in hand in any but the most general way in this chapter. The object has been to emphasize a few of the more fundamental conditions which underlie the phenomena of retardation and elimination. This object will have been attained if the following propositions have been made clear:

1. The pupil who is above the normal age for his grade is termed retarded. Such pupils constitute a large part of the membership of our schools.

2. Many retarded pupils, finding themselves, at the end of the compulsory attendance period, one or more grades below the final one, leave school without completing the elementary course. This process is termed elimination.

3. Whatever the stage of their advancement, a large part of the pupils of our schools leave at the age of fourteen. As many of them do not enter until after the age of six, and as most of them do not progress regularly at the rate of a grade each year, very few of them complete the elementary course by the time they reach the end of the compulsory attendance period.

4. These conditions vary greatly in different cities and states. The evils of retardation and elimination exist everywhere. In some places they are very serious; in others they have been reduced to a minimum.

CHAPTER III

SOME FACTORS AFFECTING GRADE DISTRIBUTION

STUDENTS and critics of our public school systems are giving more and more attention to the figures printed in the annual reports of superintendents and school boards. They are seeking to discover whether the record which lies embedded in the statistical statements of actual conditions is one of accomplishment or of failure. As they thumb the pages of school reports in quest of evidence they cannot escape the impression that the records are only fragmentary. Born of real or fancied administrative necessities, colored oftentimes by a local point of view, the printed statistical tables may throw light upon educational questions, but it is incidental to their main purpose. As the published figures are analyzed with a view to gain an answer to specific queries, the consciousness deepens that the light which the figures shed is rarely simple and pure, but is highly complex—a synthesis of the most varied elements.

In recent discussion much has been made of the falling off in the number of children in the successive grades, from the first to the eighth. Writers who have otherwise the most varied points of view have perceived in such numerical decrease a test of the efficiency of school systems. Those of a more gifted imagination have seen in them evidence of a conspicuous failure of our schools to accomplish the purpose for which they are designed, while those more cautious by nature have not hesitated to make it a reproach upon certain cities that their upper grades contained relatively fewer pupils than those of other localities.

The feeling that grade records embody facts of far-reaching consequence is widespread. It reveals itself in an increasingly general publication of figures giving the grade membership. Such tables are appearing in reports of city schools, where they

have heretofore been lacking. The latest report of the Commissioner of Education of the state of New York contains a summary of the facts for the cities of the state, and the forthcoming report will go into further details, giving not only the number in the grades, but the ages of the pupils in each of the grades for the cities of the state. The report of the United States Commissioner of Education for 1906 gives the grade distribution of the school children in 127 cities. The 1907 report contains similar data for upwards of 700 towns and cities.

Side by side with this more abundant presentation of the original data have appeared certain attempts at interpretation. In the school reports we find an occasional, not always very enlightening, comment upon the reasons of this falling off in the grades. It is in part upon an interpretation of such figures that Commissioner Draper of New York state based the cogent argument for industrial education which gave such marked distinction to his latest annual report. Nor will it be forgotten that the interpretation of such figures added to the heat—if not to the light—of the discussion at the meeting of the Department of Superintendence at Washington in February, 1908.

Figures showing grade distribution in city school systems form the simplest and most common sort of statistical information bearing on this subject. Wherever such figures are printed their most prominent characteristic is the diminution in the numbers of children in the successive grades. Thus the report of the Board of Education of Chicago for 1906 gives the average grade membership in that city as follows:

TABLE 5.—GRADE DISTRIBUTION IN CHICAGO IN 1906.

Grade	*Pupils*
First Grade	43,560
Second Grade	34,330
Third Grade	32,814
Fourth Grade	30,004
Fifth Grade	28,056
Sixth Grade	22,540
Seventh Grade	17,643
Eighth Grade	12,939

Here the figures show us that the second grade is far smaller than the first, the third considerably less numerous than the

second, and so on until we reach the eighth grade, which is considerably less than one-third as large as the first. Nor should it be supposed that Chicago is exceptional in this respect. On the contrary, very many cities show even greater disparities in their grade distributions.

The natural conclusion of the casual student of such figures is that the pupils are dropping out of school all the time, and hence the number in each grade diminishes as the grades advance. In the case cited, that of Chicago, the immediate interpretation of the figures is that of each forty-three children entering the first grade, no more than thirteen reach the eighth, and still fewer graduate. That such a conclusion is not justified is made evident by a study of some of the factors contributing to bring about the disparity in numbers noted in the several grades. The assumption that the grades should normally be about equal in number rests upon the very common idea that substantially the same number of children enter school each year, that they advance with fair regularity from grade to grade, and that they remain until the completion of the elementary course.

In fact, all of these suppositions are erroneous. To begin with, there is a certain natural decrease in the number of children with advancing age which is due to death; so that we may always expect to find fewer persons with each advancing year of age. Secondly, there is an increase in the size of each successive and younger generation of children which is due to the natural increase in population. Looked at from the standpoint of the age fourteen, each younger generation is larger. Looked at from the standpoint of the age of seven, each older generation is smaller than the preceding. It is obvious that there are in New York state more five year old children today than there were five years ago, and hence at the present time more five-year-olds than ten-year-olds. These two elements—that of death and that of the increased size of each succeeding generation—contribute to form the *factor of population.*

All children do not advance regularly from grade to grade; some of them are left behind to repeat a year or two. This is the *factor of retardation.*

All children do not complete the elementary schools. In

some localities few and in others more leave the early or primary grades, but in all localities great numbers leave the grammar grades upon reaching the age of fourteen. This is the *factor of elimination.*

Other factors may and undoubtedly do affect the size of grades in certain cases and localities. Among the possible factors may be mentioned the influx of children whose schooling has already been begun in other places, the tide to and from private and parochial schools, and the enrollment of immigrant children who enter the schools at comparatively advanced ages. But such factors are local and irregular in their influence and undoubtedly compensatory to a certain extent in their action. On the other hand, the three factors of population, retardation and elimination are always present.

THE FACTOR OF POPULATION

Two elements contributing to form the factor of population have been mentioned: decrease by death and the natural increase in successive age generations caused by an increasing population. If for the moment we assign an age to each grade, beginning with seven years as the age of pupils in the first grade, and if we suppose for the sake of argument a stationary school population in which 1000 pupils enter school each year, none die, and none drop out, we have a grade distribution as follows:

TABLE 6.—GRADE DISTRIBUTION IN A STATIONARY POPULATION WITH NO DEATHS.

Grade	*Pupils*
First Grade	1000 children 7 years old
Second Grade	1000 children 8 years old
Third Grade	1000 children 9 years old
Fourth Grade	1000 children 10 years old
Fifth Grade	1000 children 11 years old
Sixth Grade	1000 children 12 years old
Seventh Grade	1000 children 13 years old
Eighth Grade	1000 children 14 years old

If expressed in graphic form this grade distribution would, of course, show no falling off at all, as is illustrated in Diagram VI.

In the United States the annual death rate for the ages five to fifteen is 3.7 per 1000. It is not, of course, exactly 3.7 for each

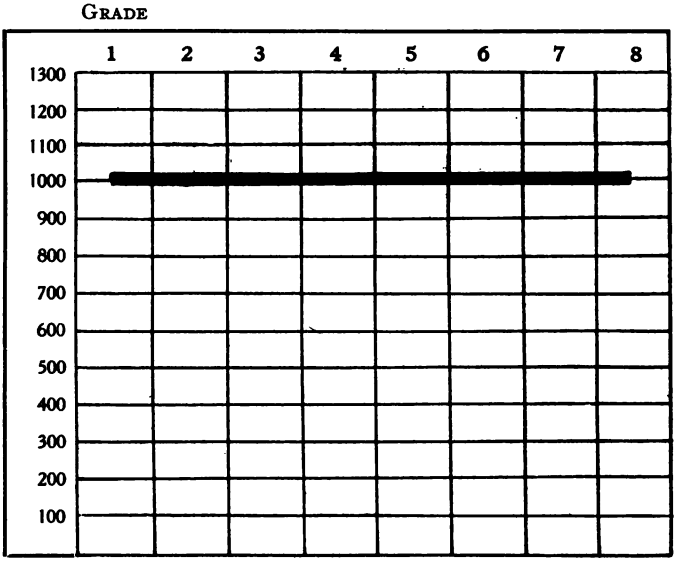

Diagram VI.—Grade distribution under ideal conditions.

of the ages, but for the sake of simplicity and because of its relative insignificance we may apply it equally to note its effect.

TABLE 7.—GRADE DISTRIBUTION SHOWING DECREASE THROUGH DEATH.

Grade	*Pupils*
First Grade	1000 children 7 years old
Second Grade	996.3 children 8 years old
Third Grade	992.4 children 9 years old
Fourth Grade	988.6 children 10 years old
Fifth Grade	984.9 children 11 years old
Sixth Grade	981.1 children 12 years old
Seventh Grade	977.4 children 13 years old
Eighth Grade	973.7 children 14 years old

It will thus be seen that the element of death alone will account for a decrease of some 26 to 27 in the progress of each 1000 children from the first grade to the eighth. How very slight a falling off is accounted for by the decrease through death is more easily seen when illustrated as in Diagram VII.

Death is a far smaller element in making up the factor of population than is the increase of population. How great a factor the two together constitute we may perhaps roughly measure by

applying to the problem the figures given for each age group from seven to fourteen years inclusive, in the aggregate population of the United States according to the census of 1900.

At that time there were in the United States 1,787,019 children seven years old. Those fourteen years old numbered 1,556,112. There are plainly two reasons why the children fourteen years old are less numerous than those seven years old: First, there were fewer children born fourteen years ago than seven years

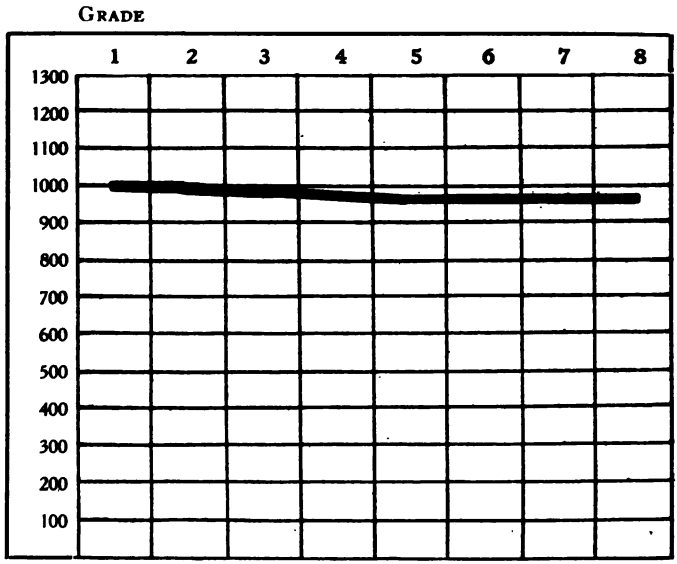

Diagram VII.—Decrease through death.

ago; second, of the children born fourteen years ago a larger proportion have died than of those born seven years ago. In less degree this is true of the eight year old children compared with the seven-year-olds. So those of nine will be slightly less numerous than those of eight. The number of children at each age from seven to fourteen will gradually diminish. By dividing the number of fourteen year old children by that of those seven years old, we can readily find how many fourteen-year-olds there are likely to be when there are, say, 1000 seven-year-olds. By means of such

relative figures we may show how many children there are in the United States as a whole at the ages of eight, nine, and so on, for each 1000 at the age of seven. Stating this in the form of a supposititious grade distribution, we have the following:

TABLE 8.—GRADE DISTRIBUTION AS INFLUENCED BY TWO ELEMENTS, DEATH AND INCREASE OF POPULATION.

Grade	*Pupils*
First Grade	1000 children 7 years old
Second Grade	985 children 8 years old
Third Grade	964 children 9 years old
Fourth Grade	938 children 10 years old
Fifth Grade	920 children 11 years old
Sixth Grade	904 children 12 years old
Seventh Grade	889 children 13 years old
Eighth Grade	871 children 14 years old

The foregoing shows most conveniently the tapering off in numbers of the population as the age increases. This becomes very evident when we interpret the facts of the table in a diagram.

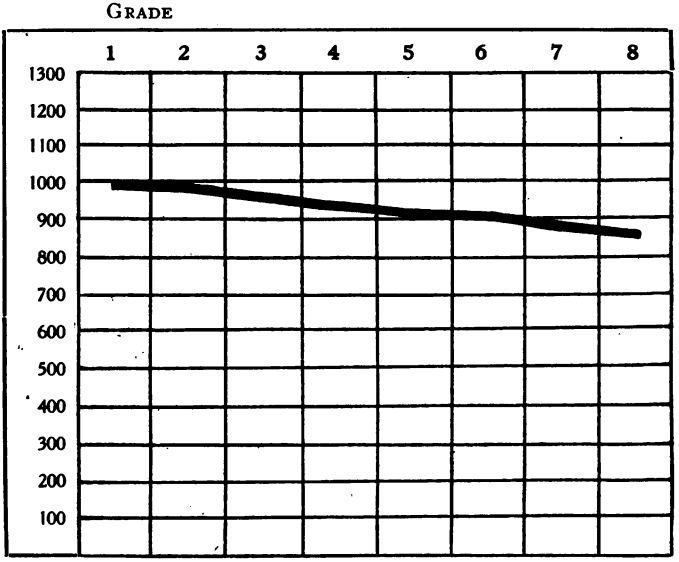

Diagram VIII.—Decrease through death and the population factor.

As before explained, this tapering off resulting in an apparent diminution in the upper ages is in reality caused by successive

increases in the lower ages. Were we to state it in other terms to make this clear we might take the age of fourteen as the basis for computing our relative figures. In that case, instead of saying that for each 1000 children seven years old there are 871 at the age of fourteen, we should say that for each 1000 at the age of fourteen we may expect to find 1148 seven years old. This is simply the same proposition stated in different terms.

It is not claimed, of course, that the figures in the table constitute an absolute measure applicable to any school system. Their value lies rather in giving a typical measure of the attenuation to be allowed for from influences of population under normal circumstances. The age distribution of the population is not, of course, uniform throughout the country. In some localities, in fact, very considerable variations from the standard are found. Neither do school grades correspond exactly with ages. Nevertheless, if children enter at the age of seven they will be at least fourteen upon reaching the eighth grade, and we shall not be far out of the way if we state that under perfect school conditions of progress and retention of pupils we could in no case expect to find more than 87 per cent as many children in the eighth grade as in the first grade. This is a constant and very considerable factor in bringing about disparity in the number of children in the several grades, and it is one which has been entirely overlooked in much of the current discussion of the problem.

THE FACTOR OF RETARDATION

We have seen that all pupils do not advance regularly from grade to grade. It is a fact of which all educators are keenly aware. But just how many pupils fail to advance and at what points in the school course, and, most important of all, for what causes, are questions as yet relatively unanswered. There is not even any general agreement as to how "percentage of promotions" shall be computed, and indeed practice is very diverse in the matter. Some information on the subject may be gleaned from a study of school reports. The most recent reports from five large cities give the following statement:

TABLE 9.—PER CENT OF PROMOTIONS IN FIVE CITIES.

City	*Per cent of Promotions*
New York	81
Chicago	84
Cincinnati	83
Columbus	78
Kansas City, Mo.	71

From these figures it appears that we shall not greatly err if we assume that about 80 per cent of the pupils in a system may reasonably be expected to advance at each regular time of promotion, and that 20 per cent will fail to be so advanced. If each year 20 per cent fail, the first grade will contain in our supposititious case the 1000 pupils just entered, as well as some who entered the year before, some who entered two years before, and a few who entered three years before, or even earlier. The actual number in the first grade will be 1250 and not 1000. Now, if the same rules hold for the other grades, and no pupils drop out,—that is, if all stay to complete the course, no matter how long it takes,—each grade will contain the same number as the first; namely, 1250. In other words, if we have four-fifths of the normal progress, or that planned by the course of study, we shall have five-fourths of the normal number of pupils in each grade. If the factor of population were inoperative, we should have under these conditions the following grade distribution:

TABLE 10.—GRADE DISTRIBUTION WHEN 80 PER CENT OF THE PUPILS ARE PROMOTED, ALL FINISH, AND THE POPULATION FACTOR DOES NOT ENTER.

Grade	*Pupils*
First Grade	1,250
Second Grade	1,250
Third Grade	1,250
Fourth Grade	1,250
Fifth Grade	1,250
Sixth Grade	1,250
Seventh Grade	1,250
Eighth Grade	1,250
	10,000

But we know that these conditions are never found. Pupils who find themselves in some grade lower than the eighth at the

age of fourteen, fifteen, or sixteen do not remain to complete the course. They drop out. This brings us to the third factor, that of elimination.

THE FACTOR OF ELIMINATION

A study of the age distribution of pupils in the schools of fifty-eight cities in the United States shows, after allowing for inaccuracies of age returns, which are proverbial, that in the main the variations in the age groups of school children in the earlier years are slight. There is a relatively marked falling off at the age of thirteen, followed by a very marked decline in numbers at the ages of fourteen, fifteen, and sixteen. That is to say, that comparatively few pupils will remain in school after the age of fourteen, many drop out at that age, and some anticipate it and leave at the age of thirteen. The data from these cities give us very nearly the following table when the figures are reduced to relative terms:

TABLE II.—DECLINE IN ATTENDANCE, AGES TEN TO SIXTEEN, IN 58 CITIES. RELATIVE FIGURES.

Age	*Pupils*
Ten years	104
Eleven years	103
Twelve years	100
Thirteen years	90
Fourteen years	60
Fifteen years	30
Sixteen years	15

From these figures we may assume as a reasonable approximation, that in the elementary schools 10 per cent of the children will have left at thirteen years of age, that 40 per cent will have left at fourteen, half of the remainder at fifteen, and again half of these at the age of sixteen.

Now, if pupils in school advanced with substantial regularity, so as to reach the upper grades by the time they attained the age of thirteen or fourteen, it is evident that elimination would not be a very powerful factor in bringing about grade disparity, and would be operative only in the highest grades. But we know that pupils of these ages are found in the intermediate grades in no inconsiderable numbers. This brings into operation the factors of retardation and elimination in combination.

RETARDATION AND ELIMINATION BOTH OPERATIVE

To show what the result is we may have recourse again to a supposititious case, but one this time which more nearly approaches conditions as found in our schools than do those cited heretofore. Suppose we have a school system where the population is stationary, where 1000 new pupils enter the schools at the age of seven each year, where there is a uniform rate of promotion of 80 per cent, and where 10 per cent of the pupils leave at the age of thirteen, 40 per cent by the time they are fourteen, 50 per cent of the remainder at fifteen years, and half of those left drop out at sixteen years of age. Under these conditions we shall have the age and grade distribution as shown in Table 12.

In this table we have for the first time a grade distribution closely approximating those commonly found in the school systems of our cities. The familiar characteristics are present; the falling off in size of the successive grades, the presence of substantially equal age groups until we reach the age of thirteen, when there is a slight falling off followed by a much sharper drop, and the small size of the eighth grade as compared with the first. We have well illustrated, too, the fact that while retardation results in holding in the first and each of the other primary grades many more children than the number entering school each year, and in the upper grades the combination of retardation and elimination accounts for the depletion which is so noticeable, yet the result is not to bring into our schools a greater number of children than those who would be present if all progressed normally. This result is only reached when promotion percentages are very low and retardation is very serious in the lower grades. To state this in terms of school administration: doing away with retardation would not do away with the problem of "part time," nor would it have much effect in reducing the number of school sittings or school rooms required, nor would it result in great financial economy. The economies effected would be educational rather than material. They would consist in giving a more extended education to a larger proportion of the children entering school.

The graphic representations giving the falling off in successive grades due to the influences of death and the population factor have shown that the tapering off from these causes is really very

TABLE 12.—AGE AND GRADE DISTRIBUTION. STATIONARY POPULATION. RETARDATION AND ELIMINATION BOTH OPERATIVE.

Grade	*Age*										*Total*
	7	8	9	10	11	12	13	14	15	16	
First	1000	200	40	8	2						1250
Second		800	320	96	25	5	1				1247
Third			640	384	150	50	13	1			1238
Fourth				512	413	203	72	17	2		1219
Fifth					410	412	221	68	14	2	1127
Sixth						328	356	166	45	10	905
Seventh							237	221	85	27	570
Eighth								127	101	44	272
Total	1000	1000	1000	1000	1000	998	900	600	247	83	7828

slight. In decided contrast is the effect due to the combined influences of retardation and elimination. When these factors are introduced the lower grades become greatly swollen, while the upper ones are decidedly depleted.

SUMMARY

Summarizing our three modifying factors of *population*, *retardation*, and *elimination*, we may compare in one table the effect which each one of these separately, and finally the three working together, will have on the grade distribution of a community when 1000 children enter the first grade.

TABLE 13.—GRADE DISTRIBUTION SHOWING MODIFICATION BY DIFFERENT FACTORS.

Grade	*No Modifying Factors*	*Death only*	*Death and Increase of Population*	*Retardation and Elimination*	*Population, Retardation and Elimination*
First . .	1000	1000	1000	1250.	1250
Second . .	1000	996	985	1247	1228
Third . .	1000	992	964	1238	1193
Fourth . .	1000	988	938	1219	1143
Fifth . .	1000	984	920	1127	1036
Sixth . .	1000	981	904	905	818
Seventh. .	1000	977	889	570.	506
Eighth . .	1000	973	871	272	237
Total. .	8000	7891	7471	7828	7411

The facts of the table showing the final distribution which we have as the resultant of the combined modifying influences of the three factors are even more impressive when expressed in graphic form as in Diagrams IX and X.

To anyone who has not devoted considerable study to the phenomena of grade distribution the results shown in the diagram may well appear extreme. At first sight the disparity in numbers between the 1250 children in the first grade and the 237 in the eighth seems unreasonably large, while on the other hand the total of the eight grades—7411—seems too small when we remember that the first grade contains 1250. Are similar con-

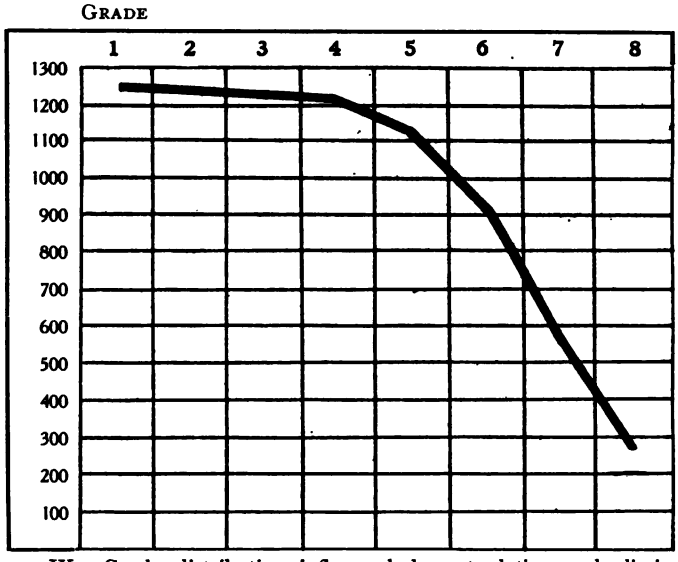

Diagram IX.—Grade distribution influenced by retardation and elimination. The lower grades are swollen and the upper ones depleted.

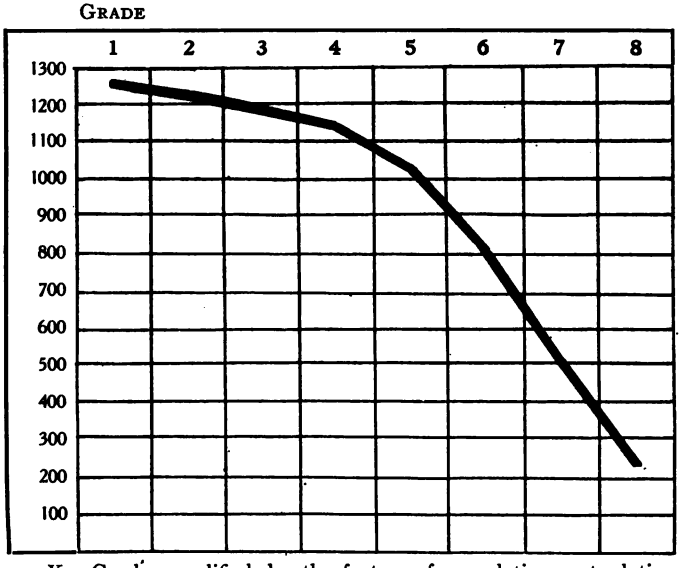

Diagram X.—Grades modified by the factors of population, retardation and elimination.

ditions really found in our city school systems? We may gain light on this point by comparing our supposititious case with the grade distributions found in some of our cities, taking in each case 1000 pupils in the first grade as a base and using relative figures to facilitate comparison.

TABLE 14.—GRADE DISTRIBUTION ON BASIS OF 1000 PUPILS IN FIRST GRADE IN THREE CITIES.

Grade	*Supposititious Case—All Three Factors Operative*	*Philadelphia* 1908	*Memphis (white)* 1908	*Passaic* 1908
First . . .	1000	1000	1000	1000
Second . . .	982	897	621	788
Third . . .	954	822	617	696
Fourth . . .	914	696	529	499
Fifth . . .	829	568	388	439
Sixth . . .	654	413	384	284
Seventh . . .	404	271	281	276
Eighth . . .	190	190	190	193
Total . .	5923	4857	4010	4175

We have here the answer to our question. Evidently the grade distributions found in our city school systems are not radically dissimilar from the distribution resulting from the application of our several hypotheses in the supposititious case. One characteristic difference, however, is noticeable. Whenever we take figures giving the grade distribution of an actual school system, we find a greater disparity between the number of children in the first and second grades than we do in our supposititious case. In city school systems we invariably find very many more first grade than second grade children. In our supposititious case we find only a few more. But it must be remembered that the difference between the figures in our supposititious case is largely the result of the modification resulting from the influence of the population factor, whereas in actual school systems the retardation factor is prominent in that the percentage of promotion from the first grade to the second is almost invariably lower than it is in the case of the higher grades. A larger proportion of children

enter the first grade late in the year, and so fail of promotion, than is the case in the other grades. As the conditions in this respect vary greatly in different localities, it is obvious that any standard which has for its basis the number of children in the first grade will be of little utility as a criterion for judging the number we may fairly expect to find in each of the other grades. To have recognized in our hypothetical case the unequal distribution of retardation by grades—it being greater in the lower, and less in the upper grades—would have introduced complications into our calculations which were deemed unnecessary, since our purpose is rather to demonstrate the existence of these factors, than to propose an exact measurement.

As a result, then, of our study we may formulate the following general rules which will serve as tolerably accurate criteria for judging the grade membership in American city school systems under substantially normal conditions of population and school administration:

1. During the eight years following their entrance into the school system we may count on about 27 in each 1000 of these children being removed by death.

2. Owing to the factor of population, composed of the two elements of death and increase of population, we may expect to find normally for each 1000 children in the first grade no more than 871 in the eighth.

3. A not uncommon measure of advance in our large city school systems is to have four-fifths of the pupils promoted at each regular time of promotion, and to have one-fifth fail.

4. It is safe to count on 10 per cent of the children leaving on reaching the age of thirteen, 40 per cent by the time they are fourteen, 50 per cent of the remainder at fifteen, and again 50 per cent of the remainder at the age of sixteen.

In general it appears, then, that the grade distribution is the resultant of such diverse elements that without the most careful analysis conclusions as to any of these elements are liable to go astray. The reader who is familiar with school reports and current educational discussion will not fail to recall instances in

which the existence of one or more of the modifying factors has been ignored. In any attempt to analyze grade figures, therefore, there must be kept clearly in mind the simple fact that at least three factors have an important share in producing the distribution of pupils by grades which is commonly observed in our elementary schools.

CHAPTER IV

EXTENT OF RETARDATION IN DIFFERENT SYSTEMS AND SCHOOLS

EVER since educators first called attention to the phenomena of retardation there has been much speculation as to how general the condition is and to how serious an extent it exists within our school systems. Up to the present time the most serious attempt to answer these questions has been that made by Dr. Oliver P. Cornman in an article published in the *Psychological Clinic* of February 15, 1908. Dr. Cornman compared conditions in Camden, Kansas City, Boston, Philadelphia and New York. In the March number of the same magazine for the same year his findings were in some measure corrected and largely expanded by Dr. Roland P. Falkner. Aside from these two articles, current educational literature has little or nothing to offer bearing on the question of comparative conditions in different localities.

The method for determining the number of retarded children in a given school system which has received most general acceptance on the part of schoolmen, is the method which enumerates the children by ages and grades and puts all of the children who are older than a determined age in each grade into a group designated "Above Normal Age." These children who are older than they should be for the grade they are in are considered "retarded." Thus used the term designates a condition, and is applied with equal propriety to those children who are over age on account of slow progress, and those who have progressed normally but entered school late.

The method has come into general acceptance because, all things considered, it is the most satisfactory standard by which to measure retardation. Statistics based on the time pupils have spent in each grade are exceedingly rare, often unreliable, and usually are non-cumulative. That is, they deal with each grade as a separate unit and fail to tell us how much time the pupil has gained or lost in the entire course.

Statistics giving us figures as to grade and age distribution on the other hand, are simple, certain, easy to gather, and embody valuable information as to many conditions and results of school work. Their application to the problem of retardation is so easy that the process may be employed by anyone, however unversed in statistical procedure.

For instance, let us consider the conditions existing in the schools of Memphis in June, 1908. On that date the children in that system were distributed by grades and ages as is shown in the following table:

TABLE 15.—GRADE AND AGE DISTRIBUTION IN MEMPHIS, TENN., JUNE, 1908, SHOWING NUMBER AND PER CENT OF RETARDED PUPILS.

Age	Grade 1	2	3	4	5	6	7	8	Total
6	782	11							793
7	699	177	50						932
8	368	403	131	5					907
9	120	349	333	104	8				914
10	44	191	335	264	67	6	1		908
11	21	81	230	302	219	83	9		945
12	12	45	109	229	201	203	77	6	882
13	1	13	43	126	182	245	178	63	851
14	4	6	25	44	85	158	175	130	627
15	1	2	6	10	26	69	92	110	316
16			1	3	8	25	43	73	153
17	1			2	1	1	3	10	18
18					1		1		2
Total	2053	1278	1269	1089	798	790	579	392	8248
Above Normal Age	572	687	749	716	504	498	314	193	4233
Per cent above Normal Age	27.8	53.7	59.0	65.7	63.1	63.0	54.2	49.2	51.3

Now, if children enter the first grade at the age of from six to six and a half years and are not retarded during the course, their ages in the several grades will be as follows:

TABLE 16.—NORMAL AGES OF CHILDREN IN THE GRADES.

Grade	*Age*
First Grade	6 to 8 years
Second Grade	7 to 9 years
Third Grade	8 to 10 years
Fourth Grade	9 to 11 years
Fifth Grade	10 to 12 years
Sixth Grade	11 to 13 years
Seventh Grade	12 to 14 years
Eighth Grade	13 to 15 years

These ages have been accepted by common consent as the "normal ages" for these grades by nearly all the schoolmen who have interested themselves in the problem.

Referring now to Table 15, it will be noticed that there is a heavy line passing between the figures showing the number of seven year old children in the first grade and the eight year old ones. All of the children above this line in the first column are of "normal age." The line advances with each grade so that in the second grade those more than nine years old are below; in the third grade those older than ten; and so on. All of the children below the heavy line are "above normal age," or retarded.

At the extreme bottom of the table are three rows of figures; the first showing the total number of children in each grade; the second, the number of retarded children; and the third, the per cent which these children are of the entire membership. It will be noted that in the school system as a whole 51.3 per cent of the pupils are in this class.

In Diagram XI the shaded portion represents the number of retarded children in each grade, and the part in outline the normal-age children, so that the relative proportions can be estimated by the eye.

It may be remarked incidentally that so far as the volume of retardation here described is concerned, Memphis is one of the cities which has a percentage rather higher than the average.

It has been objected by some that the method of computing retardation by the age and grade figures is incorrect, and not a

fair representation of the phenomena with which we are dealing. The criticism is so fundamental that it may be considered briefly at this point, since if we are wrong in our basis of computation, much of the argument in the succeeding chapters must fall to the ground. The criticism to which we refer has been voiced by Superintendent James M. Greenwood of Kansas City, who, com-

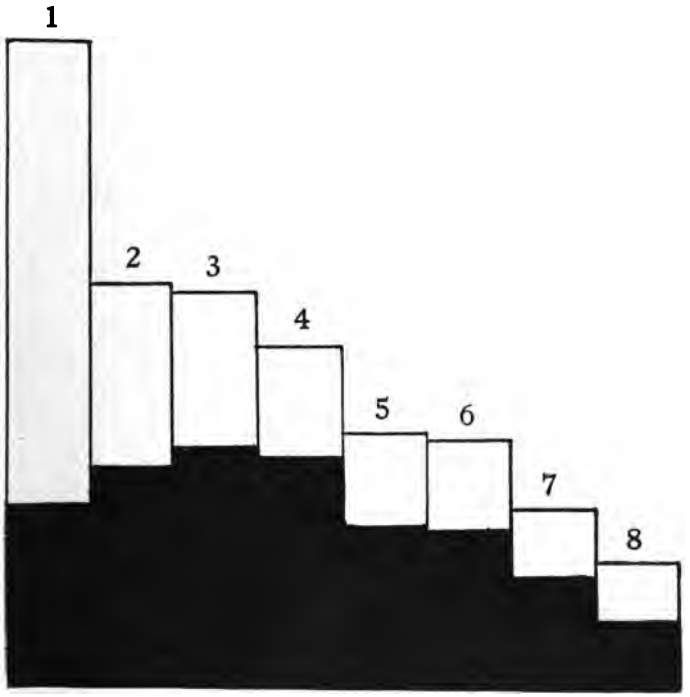

Diagram XI.—Retarded children in the grades in Memphis. Shaded portion represents retarded children.

menting upon the investigation of Dr. Cornman of Philadelphia, says:

"The only correct way to estimate retardation, or the slow movement of a pupil, is the length of time it takes him to do a year's work. It is not a question of age without respect to progress, but it is one of time required to do a given amount of work

within a specified time without regard to age. Suppose two boys enter college, one sixteen and the other nineteen years old, and each one completes the four years' work on time. Now would anyone claim that the older one was retarded? So, if a child begins the regular grade work at eight and he does a full year's work each year till he complete the elementary course, that child is not retarded, and it would be puerile to class him as a backward pupil. The only clear cases of retardation are those in which pupils are kept longer on a certain unit of work than is prescribed in the course of study. Many intelligent, sensible parents, especially in the middle and western sections of the United States, prefer not to send their children to any kind of a school till the age of eight, and where such children do enter school they go forward rapidly and easily in their studies, often skipping classes."*

If the point herein set forth is well taken, the standard of retardation should be progress, not age. These considerations put the advocates of the age standard on the defensive, and it is well to examine whether the arguments are valid. The contention is that the age standard is wrong in principle, and the implication, that the age standard exaggerates the phenomenon with which we are dealing.

Whether or not the age standard be incorrect in principle can only be decided by consideration of the significance of retardation itself. What is the essential phenomenon with which we are dealing? Is it the process by which children fall behind in their studies, or is it the fact that they have done so? Does it make any difference whether retarded children in the grades are there because they entered school late, or because having entered early they have failed to be promoted?

If we look at the matter from the standpoint of the school, the vital thing is the fact that classes are now too often composed of heterogeneous elements. The child of nine acts and thinks differently from the child of seven. Put the two in the same class and the work of the teacher is increased, the amount of attention which can be given to each diminished, and the effect of the teaching is therefore lessened. No one can doubt that

* *Educational Review*, Sept., 1908. p. 147.

it would be a very great advantage if children could be so classified that the classes would be more homogeneous with respect to age. They would respond more rapidly to the instruction of the teacher; they would act more as a unit and less as a collection of individuals.

From the standpoint of the child, the essential evil of retardation is that it lessens the prospect of securing a reasonably complete elementary education. We have already seen that many children leave school at the age of fourteen, and therefore for the majority of children the possibilities of acquiring an elementary education are measured in years by the number which can be spent in school before that age is reached. It requires no very profound acquaintance with mathematics to observe that a child who enters school at eight years of age—as suggested by Superintendent Greenwood—can get only six years of elementary schooling before he reaches fourteen. Obviously, he cannot by normal progress complete the work of the elementary school course.

Then the question arises whether the six years of schooling will be equivalent to six grades of school work. Unless the child is unusually gifted the prospects are not good for his securing that amount. The chances are at least equal that he will get less. Is there any chance that he will get more? Mr. Greenwood seems to think that the child who enters late will progress rapidly through the grades, but experience does not show that our school systems, as a rule, make any provision whatsoever for the rapid progress of pupils. Once in a while a child may skip a grade, but the cases in which this occurs are wofully rare. This will be examined more in detail in a later chapter. It is enough for our present purpose to recall that the graduating class is small in comparison with the entering class for all the elementary schools.

Moreover, progress itself may mean two things,—it may be a designation of the ground covered, or it may again represent the point reached through the process. If we regard it in the latter light there is certainly no impropriety in considering that a child who enters late upon his school work has neglected his opportunities. By the late start he is far behind his fellows in the race.

The age standard is, therefore, justified from this point of view. It has a further advantage in that it is easily applied.

When we consider that no school system has yet given us a complete record of the number of years required by each pupil to reach his present grade, and that to establish such a record at the present time would mean to wait at least eight years before we could properly discuss the matter for the elementary schools, there is an additional reason for evolving a method which can be used at any time and requires no more effort than an exact determination of the present ages of pupils in the grades they now occupy.

The implication, moreover, that such a progress standard as suggested by Mr. Greenwood would show that there are fewer retarded pupils than would the age standard, does not correspond to such facts as we now know. In Boston for instance, in 1897, 46 per cent of the pupils took more than the regular time to finish the three primary grades, yet at the same time the percentage of retardation in the fourth grade was only 29.3 per cent. In like manner we note that in 1894 in that city 34.5 per cent took more than the regular time to finish the last six—or grammar—grades, not counting, of course, any slow progress which the same pupils may have previously made in the primary grades. Yet the percentage of age retardation in 1896 was only 20 per cent for the ninth grade.

Other figures, so far as they are available, confirm this conviction, and the reason therefor is not very difficult to perceive. In the application of the age standard there is a certain generosity in the accepted measure. If we do not consider a child in the first grade as above normal until after the age of eight, we must recognize that for those who enter the first grade early—say exactly at six—we have already a margin which permits a child to spend two years in the first grade without coming in the retarded class. That this margin is justified appears from the record of frequent failure and frequent absence in the first primary grade. The progress standard proposed by Mr. Greenwood admits of no such margin, and consequently, if it were rigorously applied, the recorded failures among those who enter early would add much more to the percentage of retardation than the lack of failure on the part of those who enter school late; for, after all, those who enter school late are the exception rather than the rule. We may rest assured that the

method adopted in this discussion is one which minimizes rather than exaggerates the conditions of which we treat.

Now, it is perfectly evident that the results secured in computing retardation by the age and grade method may vary considerably according to the details of the method employed in gathering the statistics. In the same city results computed in September might differ materially from those gathered in the following June, for if promotions were made on the yearly basis the children would still be in the same grades, but they would average nearly a year older. The September statistics would show a lower percentage of retarded pupils than would the June ones. Moreover, figures gathered on the basis of total enrollment will differ from those gathered at a given date in the school year. For these reasons results from different cities are only comparable when gathered on the same basis.

Age and grade statistics have been secured from thirty-one cities and the results are shown in the following table in which the cities are grouped according to the basis on which the data were gathered, thus enabling us to compare conditions in the different localities.

TABLE 17.—NUMBER AND PER CENT OF RETARDED PUPILS. ENROLLMENT IN SEPTEMBER. SIX CITIES.

City	*Date*	*Pupils Enrolled*	*Number Retarded*	*Per cent Retarded*
Medford, Mass.	1907–8	3572	269	7.5
Waltham, Mass.	1908	2579	274	10.6
Meriden, Conn.	1907	4241	551	13.0
Quincy, Mass.	1908	5445	976	17.9
Springfield, Mass.	1907–8	10034	2342	23.3
Woonsocket, R. I.	1907	3160	1121	35.4

TABLE 18.—NUMBER AND PER CENT OF RETARDED PUPILS. ENROLLMENT IN JUNE. FIVE CITIES.

City	*Date*	*Pupils Enrolled*	*Number Retarded*	*Per cent Retarded*
York, Pa.	1908	6085	2335	38.3
Memphis, Tenn. (white)	1908	8248	4233	51.3
Cincinnati, O.	1907	38280	22505	58.7
Erie, Pa.	1901	5482	3297	60.1
Memphis, Tenn. (colored)	1908	4887	3704	75.8

TABLE 19.—NUMBER AND PER CENT OF RETARDED PUPILS. ENROLLMENT IN JUNE AFTER PROMOTION. TWO CITIES.

City	*Date*	*Pupils Enrolled*	*Number Retarded*	*Per cent Retarded*
New York City	1908	559120	161373	30.0
Philadelphia, Pa.	1908	148814	54798	36.8

TABLE 20.—NUMBER AND PER CENT OF RETARDED PUPILS. TOTAL ENROLLMENT. EIGHT CITIES.

City	*Date*	*Pupils Enrolled*	*Number Retarded*	*Per cent Retarded*
Ft. Wayne, Ind.	1906–7	5558	1299	23.3
Portland, Ore.	1907	15637	4804	30.7
Utica, N. Y.	1906–7	9039	2948	32.6
Troy, N. Y.	1903–4	6157	2198	35.6
Columbus, O.	1906–7	19195	7175	37.3
Los Angeles, Cal.	1903–4	29018	11119	38.3
Camden, N. J.	1905–6	13127	6086	46.3
Kansas City, Mo.	1906–7	28509	13848	48.5

TABLE 21.—NUMBER AND PER CENT OF RETARDED PUPILS. ENROLLMENT AT A GIVEN DATE. TWELVE CITIES.

City	*Date*	*Pupils Enrolled*	*Number Retarded*	*Per cent Retarded*
Aurora, Ill.	Oct., 1907	1872	343	18.3
Boston, Mass.	Jan. 31, 1907	82452	15315	18.5
Malden, Mass.	Dec. 3, 1908	5988	1109	18.5
Decatur, Ill.	1908	3970	1188	29.9
Newark, O.	Dec. 6, 1908	3293	985	29.9
Reading, Pa.	Mar. 1, 1907	10908	3455	31.6
Trenton, N. J.	Nov., 1903	8834	2721	32.0
Wilmington, Del. (white)	1905–6	7594	2826	37.2
Kingston, N. Y.	1908	3209	1233	38.4
Baltimore, Md.	Dec. 31, 1905	66142	30655	46.3
St. Louis, Mo.	Dec. 1, 1901	66508	31017	46.6
Wilmington (colored)	1905–6	1035	651	62.8

While, as has been explained, the retardation figures from the different cities are only comparable when based on figures

gathered by the same method, it is nevertheless worth while to list all of the cities in the order of the percentage of retardation indicated. This table is useful, not for purposes of comparison of conditions in the cities, but rather to show the great range in the percentages of retardation found.

TABLE 22.—PER CENT OF RETARDED PUPILS. THIRTY-ONE CITIES.

City	*Per cent Retarded*
1. Medford, Mass.	7.5
2. Waltham, Mass.	10.6
3. Meriden, Conn.	13.0
4. Quincy, Mass.	17.9
5. Aurora, Ill.	18.3
6. Boston, Mass.	18.5
7. Malden, Mass.	18.5
8. Fort Wayne, Ind.	23.3
9. Springfield, Mass.	23.3
10. Decatur, Ill.	29.9
11. Newark, Ohio	29.9
12. New York, N. Y.	30.0
13. Portland, Ore.	30.7
14. Reading, Pa.	31.6
15. Trenton, N. J.	32.0
16. Utica, N. Y.	32.6
17. Woonsocket, R. I.	35.4
18. Troy, N. Y.	35.6
19. Philadelphia, Pa.	36.8
20. Wilmington, Del. (white)	37.2
21. Columbus, Ohio	37.3
22. Los Angeles, Cal.	38.3
23. York, Pa.	38.3
24. Kingston, N. Y.	38.4
25. Baltimore, Md.	46.3
26. Camden, N. J.	46.3
27. St. Louis, Mo.	46.6
28. Kansas City, Mo.	48.5
29. Memphis, Tenn. (white)	51.3
30. Cincinnati, Ohio	58.7
31. Erie, Pa.	60.1
32. Wilmington, Del. (colored)	62.8
33. Memphis, Tenn. (colored)	75.8

It is noteworthy that the city having the lowest per cent of retardation is Medford with 7.5 of her pupils in that class. This is on the basis of enrollment in September. The colored pupils of Memphis show the highest percentage of retardation (75.8) and the figure is based on the enrollment in June. As was explained earlier in the chapter, figures taken in September will inevitably show a lower percentage of retardation than will

similar data gathered in June. Therefore, it is nearly certain that if the data were gathered in all cases on the same basis there would not be so great a discrepancy between the two cities at the extremes of the table. On the other hand, it is entirely probable that if all the computations were made on the same basis Medford would still have the best record, and the colored pupils of Memphis the worst.

The table is instructive in disclosing how important a matter retardation is in all the cities from which data are available. On the average, approximately one-third of all of the children in our city schools are above the normal age for their grades,—they are retarded. The table is further instructive in showing what a wide variation there is in conditions. In the cities making the best showing the number and percentage of retarded pupils are almost negligible. In the cities making the poorest showing the large majority of all of the children are over age for their grades.

TABLE 23.—PER CENT OF PUPILS ABOVE NORMAL AGE BY SCHOOLS. NEW YORK INVESTIGATION, 1908.

School	*Per cent*
A Boys	27.7
A Girls	20.4
B Boys	14.4
B Girls	17.8
C	22.9
D Boys	29.3
D Girls	32.0
E	36.6
F	23.1
G	24.4
H	20.9
I	21.2
J	18.3
K Boys	10.9
K Girls	19.8
Total	22.9

That the different units of city school systems are far from being homogeneous in regard to the prevalence and seriousness of retardation was clearly shown by the study conducted in New York City in the spring of 1908 by the Backward Children Investigation to which reference has been made. In that investigation a careful study was made of the school records of 19,328

children in fifteen schools in Manhattan. Nearly 23 per cent (22.9) of these children were above normal age for their grades. However, the fifteen schools contributing to make up this total were far from exhibiting the same percentages of retardation. On the contrary, the group was far from homogeneous in this respect. There was found a considerable individuality among schools. The percentage of retarded children in each is shown in Table 23.

Percentage of pupils above normal age is not in itself to be accepted as a trustworthy criterion of school efficiency. The widely varying conditions found in different sections of the city preclude the possibility of saying with any degree of certainty that because school A shows 30 per cent of retarded pupils as compared with 20 per cent for school B, that the former is thereby shown to be less efficient than the latter. When, however, schools are situated together and draw their pupils from the same social and racial classes, comparison becomes possible. These conditions are found in the cases of those schools where the boys and girls are taught separately in different buildings and under different principals. The schools where these conditions obtain and the percentage of retarded children for each are as follows:

TABLE 24.—BOYS' AND GIRLS' SCHOOLS COMPARED.

School	*Per cent Above Normal Age*
A Boys	27.7
A Girls	20.4
B Boys	14.4
B Girls	17.8
D Boys	29.3
D Girls	32.0
K Boys	10.9
K Girls	19.8

These comparisons are significant. It is noteworthy that the differences are not due to the sex of the pupils, for the boys make the better showing in three of the cases, while the girls do better in the other case. The difference then must be in the schools themselves. In the last case the comparison is particularly striking, the girls' school showing almost twice as large a percentage of retardation as does the boys' school. Similar

comparisons could doubtless be made with great advantage between many schools in different cities.

From the data which have been discussed four conclusions of value may be drawn:

1. Percentages showing the amount of retardation among school children vary considerably according to the methods by which they are gathered. Therefore, figures from different cities are not comparable unless gathered by the same method.

2. There is a high variability between cities in respect to the proportion of over-age children. Among the thirty-one cities studied, Medford, Massachusetts, makes the best showing with 7.5 per cent of the pupils in the above normal age class. The colored pupils of Memphis make the poorest showing with 75.8 per cent above normal age. In the thirty-one cities taken as a whole, 33.7 per cent of the children, or a trifle more than one-third, are above normal age for their grades. These figures probably represent with fair accuracy average conditions in city school systems of this country.

3. There may be considerable variation between percentages of retarded children in different schools of the same system. In an investigation conducted in New York in fifteen schools, in the one making the best showing only 10.9 per cent of the children were retarded; in the one making the poorest showing 36.6 per cent were retarded.

4. Striking differences are sometimes found between schools situated together and drawing their pupils from the same racial and social classes. Under such conditions the per cent of retarded children constitutes a trustworthy criterion of one important phase of school efficiency. In the investigation in New York, in some cases nearly twice as great a proportion of the children were retarded as in neighboring schools where external conditions were identical.

CHAPTER V

MORTALITY AND SURVIVAL IN THE GRADES

A FACTORY is most efficient when it is being worked to its full capacity. As rises or falls the relation of finished product to raw materials, so rise or fall profits and dividends. These principles of manufacturing economics are the impelling forces that explain the vigilant care with which managers and owners watch these variable features and the painstaking exactness with which they state them in the annual reports of mercantile corporations.

In vivid contrast to this condition is the lack of definite information available in the field of educational administration with respect to the degree of efficiency in the use of our educational plants.

What proportion of the children who enter our schools remain to complete the elementary course? Among all the questions in the field of school administration this is today one of the most important. It is the question of the relation of the finished product to the raw material. By common agreement educators, law-makers and publicists have very generally come to hold, either tacitly or expressedly, that the amount of education furnished by our common school course is the minimum which may be safely allowed to the future citizens of this democracy.

If then it be shown that our schools are generally and in large measure falling short of supplying this minimum amount of education; if it be shown that a large part of the pupils fall out before completing the elementary course; this constitutes a serious indictment of our public school system. Again, if we can establish a method by which we can ascertain the proportion of the children continuing until they reach the final grade in different systems, we shall have secured an important form of the type of measure so much needed and so commonly lacking in matters educational—that is, a standard of comparison.

If we are to answer the question for a given school system

—"What proportion of the children who enter the first grade continue to the eighth?"—our first step must obviously be to discover how many enter the first grade.

This is the crux of the whole matter. The seeker after truth who is not a close student of educational statistics will at once inquire why we should not ascertain from the published reports the number of beginners each year, and with this as a basis proceed to calculate the percentage of survivors in the final grade. Surely so obviously significant a figure as the one giving the number of new children entering the school system each year must be stated in the printed reports!

The answer is that the city superintendents who have recognized the importance of this item and state it in their reports can be counted on the thumbs of two hands. For all other cases we must have recourse to computations. Many attempts at such computations have been made; almost without exception they have been more or less directly based on the membership of the grades. For instance, the enrollment in the grades in Boston on January 31, 1906, was as follows:

TABLE 25.—ENROLLMENT BY GRADES. BOSTON, JANUARY 31, 1906.

Grade	*Pupils*
First Grade	13,669
Second Grade	10,276
Third Grade	9,336
Fourth Grade	9,402
Fifth Grade	8,788
Sixth Grade	7,894
Seventh Grade	6,691
Eighth Grade	5,321
Ninth Grade	4,408

If we reduce these figures to proportional figures on the basis of 1000 children in the first grade, we shall have the following:

TABLE 26.—GRADES IN BOSTON. RELATIVE FIGURES.

Grade	*Pupils*
First Grade	1,000
Second Grade	753
Third Grade	684
Fourth Grade	689
Fifth Grade	644
Sixth Grade	578
Seventh Grade	490
Eighth Grade	390
Ninth Grade	323

Here, as in almost all such tables, the characteristic feature is that the number of children rapidly falls off with the advancing grades. For each 1000 children in the first grade we find only 323 in the ninth. We know that many children leave school before completing the elementary course, and so the obvious and not uncommon interpretation of the figures is: For each 1000 children entering the first grade in Boston only 323 reach the ninth grade. But this interpretation, while apparently obvious, is entirely erroneous. The reason is, as has been previously pointed out, that the number of children in the first grade is never the number of beginners. A first grade is made up of some children who first entered school this year, plus some who entered a year ago, plus some who entered two years ago, plus some who entered even earlier. A similar state of affairs is found in the second and third grades. The number beginning school, then, is not the number in the first grade, but always a number somewhat smaller.

How, then shall we ascertain the number of beginners? It is not a matter of record in the printed reports of the schools; nor can we, for reasons already indicated, infer it from the number of pupils in the grades. An extended study has led me to the belief that we must seek an answer in the figures which record the ages of the pupils in our schools. For instance, the pupils enrolled in all the day schools of Medford, Massachusetts, on September 30, 1907, were grouped by ages as follows:

TABLE 27.—AGE DISTRIBUTION IN MEDFORD, MASS., SEPTEMBER 30, 1907.

Age	*Pupils*
Four years	146
Five years	330
Six years	358
Seven years	372
Eight years	374
Nine years	380
Ten years	417
Eleven years	377
Twelve years	385
Thirteen years	359
Fourteen years	275
Fifteen years	188
Sixteen years	151
Seventeen years	72
Eighteen years	27

It needs but a glance at this table to see that the numbers credited to the ages seven to thirteen inclusive are very similar in size. The average of these numbers is 380, and the largest variation is 37 at the age of ten. From the age of seven years, when children generally enter school, up to the age of thirteen years, before which they do not leave, each age—or each generation, to use the statistical designation of the persons born in a given year—is substantially equal. However much the ages of the entering pupils may vary—and we know they vary within a normal range only—it is clear that the number who enter each year cannot on the average exceed the number who become of school age each year, and must in practice very closely approximate it. In other words, *the number of children beginning school each year is approximately equal to the average of the generations of the ages seven to twelve in the school membership of the system.* It is not necessary to predicate for the essential truth of this conclusion that all the children enter the public schools. Whether it be all the city's population or only a large fraction of it which enters the public schools, it is still true for this body of pupils that the average of the groups at the ages seven to twelve among them is the best test of the number who enter the schools annually.*

For the general rule we have taken, as in the illustration for Medford, seven years as the lower age limit. Some children may enter at eight or even later, but the number is so small that it may be disregarded. It is substantially true everywhere that all the children are in school by the age of seven.

As the upper limit we have taken the age of twelve years

* In our theoretical discussion of factors affecting grade distribution we called attention to the fact that the generations seven to twelve were of different size. In the present discussion substantial equality has been predicated for purely practical reasons. Ages are not reported either in the census or in the schools with absolute exactness, and hence the measurement of small variations becomes impracticable. In the second place, there is no one age distribution which is typical of all cities. The rule of equality is as fair to all as would be any other. Again, if our knowledge of age conditions in the several cities were exact enough for us to compute for each the relation in numbers between the seven-year-olds and the twelve-year-olds, the difference in the case of the seven-year-olds would be slight. We should expect the average to equal the number at the age of nine and the variations on either side of it would be only such as, at a maximum, three years could produce. It is doubtful whether in any case it would exceed 5 or 6 per cent, a variation which appears negligible in calculation which is of necessity merely approximate.

rather than thirteen years as in the Medford illustration. Elsewhere there is so frequently a considerable difference between the ages twelve and thirteen as to suggest that quite a number leave school at the latter age, and to make it unsafe to include thirteen years in the calculation. There is no such falling off at the age of twelve. Moreover, the disappearance of thirteen-year-old children in the elementary schools may be due in some measure to "elimination upwards" into the high school,—a consideration of importance in those cities where we have age figures for elementary schools only.

Earlier in this chapter it was stated that diligent study of school reports had brought to light only two cities in which the number of new pupils entering is stated. These two cities are Somerville, Massachusetts, and Reading, Pennsylvania. They offer us an opportunity to check the method with the known facts in the case.

The report for Somerville for 1907 gives the membership of the grades in December as follows:

TABLE 28.—GRADES IN SOMERVILLE, MASS., DECEMBER, 1907.

Grade	*Pupils*
First Grade	1532
Second Grade	1384
Third Grade	1375
Fourth Grade	1337
Fifth Grade	1339
Sixth Grade	1201
Seventh Grade	1022
Eighth Grade	831
Ninth Grade	789

The number of beginners is stated as 1210. Obviously this number could not be calculated from an inspection of the grade memberships. It is far less than the number in the first grade and less than the number in any grade up to the sixth. The distribution by ages is not given in the Somerville report, so we cannot proceed further. We are more fortunate in the case of Reading.

In that city, in March, 1907, grades were as follows:

TABLE 29.—GRADES IN READING, PA., MARCH, 1907.

Grade	*Pupils*
First Grade	1814
Second Grade	1663
Third Grade	1841
Fourth Grade	1807
Fifth Grade	1636
Sixth Grade	979
Seventh Grade	677
Eighth Grade	491

The number of beginners is stated as 1434. Here again the number of entering pupils is far less than the first grade, and smaller than any grade up to the sixth. The average of the age groups from seven to twelve is 1354, or 80 less than the number stated as entering that year. That it should be less is not a matter of surprise, for each succeeding age group will normally be a little smaller than the preceding, and as the average age of an entering class will usually not be over seven years, it is natural that the average of the seven to twelve year group at a given time should be slightly smaller than the number of beginners in the same year.

On the other hand, our object is to secure a measure of the number of entering pupils with which to compare our present eighth grade pupils. The present eighth grade is largely made up of children who entered school eight years ago. The number of beginners then is in most cases smaller than the number of beginners now, on account of the increase in population. Therefore, the number we require is one somewhat smaller than the present number of beginners. Our average of the seven to twelve year groups is such a number.

It is not claimed for the proposed standard that it will give an accurate measure of the number of beginners. What is claimed for it is that *it will never give a result far from the truth; that the measure can be applied and understood by anyone; and that it offers a safe basis for comparisons.*

The next point to be considered is the results obtained by applying the new standard to the available age and grade figures. The results are as follows:

TABLE 30.—SHOWING THE NUMBER OF CHILDREN BEGINNING SCHOOL ANNUALLY IN EACH OF FIFTY-NINE CITIES AND THE PER CENT WHICH EACH GRADE IS OF THE NUMBER OF BEGINNERS.

City	Report Used	Basis	No. of Beginners	Elementary Grades									High School			
				1	2	3	4	5	6	7	8	9	I	II	III	IV
1. Quincy, Mass.	1908	E.G.D.	552	172	139	127	120	125	115	105	82	..	61	35	22	18
2. Aurora, Ill.	1908	E.G.D.	218	174	130	111	87	79	123	75	79	..	58	51	25	25
3. Haverhill, Mass.	1908	E.G.D.	485	136	111	111	109	114	110	106	90	78	47	32	24	24
4. Decatur, Ill.	1908	T.E.	474	171	124	130	132	107	96	77	..	..	44	33	25	24
5. Fort Wayne, Ind.	1906–7	T.E.	609	155	120	129	124	115	109	82	77	..	67	23	13	8
6. Grand Rapids, Mich.	1906–7	T.E.	1379	173	118	118	112	111	96	76	76	..	45	45	41	11
7. Omaha, Neb.	1906–7	T.E.	1607	150	118	114	121	121	108	89	74	..	61	26	16	13
8. Kingston, N. Y.	1908–9	T.E.	337	215	124	121	131	118	97	72	74	..	74	32	17	16
9. Waltham, Mass.	1909	E.G.D.	276	122	115	97	114	106	116	112	80	73	71	48	30	29
10. Medford, Mass.	1907	E.G.D.	384	122	109	104	117	114	111	93	86	72	50	30	26	14
11. Richmond, Va. (white)	1907	T.E.	1043	149	126	123	114	106	88	72	..	..	52	29	12	..
12. Malden, Mass.	1908	E.G.D.	616	163	113	115	124	120	100	93	74	70	47	37	22	19
13. Wilmington, Del. (white)	1905–6	E.G.D.	869	137	123	117	131	110	102	83	70	..	47	17	12	..
14. Newton, Mass.	1906	E.G.D.	516	135	119	120	113	107	104	89	78	69	55	46	38	38
15. Denver, Colo.	1906–7	T.E.	3062	166	121	125	130	116	112	82	69	..	43	35	22	14
16. Kansas City, Mo.	1906–7	T.E.	3195	197	134	132	128	103	84	67	..	..	48	34	27	22
17. Somerville, Mass.	1907	E.G.D.	1225	125	112	112	109	101	98	83	68	64	48	33	26	22
18. Minneapolis, Minn.	1907	T.E.	4141	216	121	128	120	113	105	87	62	..	40	34	20	15
19. Springfield, Ohio	1907	T.E.	664	139	131	136	122	118	100	81	59	..	45	27	15	7
20. Boston, Mass.	1906–7	E.G.D.	8265	160	125	113	116	106	100	84	64	59	29	19	15	6
21. Fitchburg, Mass.	1907	E.G.D.	383	148	120	104	102	104	64	99	87	58	74	41	27	23

TABLE 30.—SHOWING THE NUMBER OF CHILDREN BEGINNING SCHOOL ANNUALLY IN EACH OF FIFTY-NINE CITIES AND THE PER CENT WHICH EACH GRADE IS OF THE NUMBER OF BEGINNERS.—(*Continued.*)

City	Report Used	Basis	No. of Beginners	Elementary Grades									High School			
				1	2	3	4	5	6	7	8	9	I	II	III	IV
22. Newark, Ohio	1908	E.G.D.	327	135	122	138	120	127	93	82	58	..	48	35	25	25
23. Columbus, Ohio	1906	T.E.	2118	175	122	128	130	110	90	71	58	..	43	32	23	15
24. Springfield, Mass.	1907–8	E.G.D.	1047	149	129	123	117	115	101	93	76	57	17	16	15	11
25. New Brunswick, N. J.	1907–8	T.E.	274	204	130	133	100	104	80	66	55	..	66	27	22	16
26. Portland, Me.	1906–7	T.E.	859	143	131	123	122	107	96	80	62	55	40	29	19	16
27. Lowell, Mass.	1908	E.G.D.	946	171	145	117	121	111	99	79	67	54	39	32	27	17
28. New Haven, Conn.	1908	T.E.	1922	155	139	139	132	110	97	76	53	..	45	23	22	15
29. Portland, Ore.	1906–7	E.G.D.	1693	147	112	114	124	111	106	90	66	53	..	..	..	..
30. Chicago, Ill.	*1906	A.E.	2475	176	139	133	121	113	91	71	52	..	22	13	8	5
31. New Orleans, La. (colored)	1907–8	T.E.	767	329	174	173	92	52	..	..	..	..	..	..	..	..
32. Los Angeles, Cal.	1903–4	T.E.	2893	197	120	142	120	112	95	73	50	..	50	21	9	9
33. Williamsport, Pa.	1908–9	T.E.	513	145	112	119	139	121	96	81	58	48	48	26	13	10
34. Newport, R. I.	1907	E.G.D.	348	126	111	103	106	97	93	80	63	48	41	24	15	12
35. Cleveland, O.	1905–6	T.E.	7367	188	132	139	114	107	86	62	48	..	28	17	13	10
36. York, Pa.	1907–8	T.E.	711	158	125	126	121	118	98	63	47	..	27	20	14	10
37. Louisville, Ky. (white)	1904–5	A.E.	2431	139	118	112	109	95	73	64	47	..	27	20	16	7
38. Meriden, Conn.	1907–8	E.G.D.	404	125	118	128	113	101	106	79	62	46	42	18	13	9
39. Richmond (colored)	1907	T.E.	591	217	150	128	116	96	67	46	..	..	10	8	8	..
40. Dayton, O.	*1906–7	T.E.	1214	120	121	129	124	111	85	68	46	..	32	29	19	15
41. Salt Lake City, Utah	1900–1	T.E.	1283	129	125	129	106	104	95	71	45	..	25	15	13	9
42. Jersey City, N. J.	*1906	E.G.D.	3267	193	144	139	120	99	81	55	45	..	15	7	4	3

TABLE 30.—SHOWING THE NUMBER OF CHILDREN BEGINNING SCHOOL ANNUALLY IN EACH OF FIFTY-NINE CITIES AND THE PER CENT WHICH EACH GRADE IS OF THE NUMBER OF BEGINNERS.—(*Continued.*)

City	*Report Used*	*Basis*	*No. of Beginners*	Elementary Grades									High School			
				1	2	3	4	5	6	7	8	9	I	II	III	IV
43. Memphis, Tenn. (white)	1908	E.G.D.	914	225	140	139	119	87	86	63	43	..	43	14	9	..
44. New York, N. Y	1908	E.G.D.	65298	137	124	123	118	106	83	61	43	..	20	11	6	3
45. St. Louis, Mo.	*1906–7	E.G.D.	7413	123	135	121	120	101	70	56	42	..	24	13	7	6
46. Cincinnati, O.	1907	E.G.D.	4507	176	137	135	120	100	81	60	41	..	21	11	7	5
47. Trenton, N. J.	1903–4	E.G.D.	1039	260	117	120	104	80	75	56	38	..	21	17	12	10
48. Utica, N. Y.	1906–7	T.E.	938	154	140	109	113	103	86	63	49	38	32	14	17	10
49. Passaic, N. J.	1907–8	T.E.	712	192	151	134	96	84	55	53	37	..	22	7	6	6
50. Reading, Pa.	1907	E.G.D.	1354	134	123	136	134	121	72	50	36	..	30	16	12	5
51. Paterson, N. J.	*1907	T.E.	1894	168	138	128	125	108	86	57	36	..	35	17	10	5
52. Troy, N. Y.	1903–4	T.E.	651	208	144	139	129	102	100	62	35	..	..	..	..	..
53. Philadelphia, Pa.	1908	E.G.D.	18007	170	153	140	119	97	70	46	32	..	19	13	9	3
54. Wheeling, W. Va.	*1906–7	T.E.	640	220	146	137	103	102	69	50	31	..	18	11	10	3
55. Woonsocket, R. I.	1908	E.G.D.	305	250	167	152	149	101	79	60	44	30	22	13	13	11
56. Baltimore, Md.	1906–7	T.E.	7586	193	158	147	121	88	65	46	29	..	20	14	9	6
57. Newark, N. J.	1906–7	T.E.	5084	204	148	141	125	94	68	43	28	..	23	9	5	3
58. Hoboken, N. J.	1906–7	T.E.	1121	200	144	112	111	100	62	46	27	..	18	12	4	4
59. Erie, Pa.	1901	E.G.D.	656	185	193	222	100	69	39	27	..	..	..	..	..	..
60. Wilmington (colored)	1905–6	E.G.D.	106	281	154	134	124	72	126	59	26	..	16	15	14	..
61. New Orleans, La. (white)	1907–8	T.E.	3058	228	159	143	117	79	54	39	26	..	16	10	11	..
62. Camden, N. J.	1906–7	T.E.	1475	248	155	147	131	88	56	32	17	..	10	7	5	3
63. Memphis (colored)	1908	E.G.D.	508	437	169	135	83	56	39	26	16	..	11	7	4	..
Medians				173	129	128	120	106	90	71	51	57	40	19	14	10

In the preceding table it will be noted that six of the cities are marked with a star (*). This indicates in each case that the average of the age groups seven to twelve was found by the use of relative figures. This has been necessary because age statistics and figures showing the membership in the several grades are taken in these cities on a separate basis and it has been necessary to equalize them. In all the other cases the original data are used. In the column headed "Basis" will be found in some cases the letters E. G. D., in others T. E., and in some others A. E. The first set of initials indicates *enrollment at a given date;* the second, *total enrollment;* and third, *average enrollment.*

The cities are ranked in the table according to the per cent of the beginning pupils found in the final elementary grade. If the figures for any given city are studied it will be noted that the membership in any one of the lower grades is considerably more than 100 per cent of the annual number of beginners. This, as we have seen, is because the lower grades are in large measure made up of children who do not advance as they should. The stream of children progressing through the grades is dammed so that these grades are abnormally swollen. The upper grades, we find, have in them less than 100 per cent of the annual number of beginners, chiefly because many children are retarded in the lower grades. At the end of the compulsory age period they find themselves still far from graduation. They are humiliated and discouraged by their lack of success and find the work of the grades they are in most distasteful. As the law no longer compels attendance they drop out. These two forces, the slow progress of the children in the lower grades and the dropping out of over-age pupils in the upper ones, account for the figures showing that, as a rule, each lower grade holds far more than 100 per cent of the annual number of beginners, and each upper grade, far less than 100 per cent.

The median figures at the foot of the table show the general tendency of American city school systems. The membership of the first grade is 173 per cent of the annual number of beginners. In other words, in the typical first grade, for every four beginners there are three other children who are repeating the work of the grade. The second, third, fourth and fifth grades all contain

considerable proportions of repeaters. The sixth is the first grade showing any dropping out of pupils. By this grade 10 per cent have left. The seventh grade shows such a decided falling off that only 71 per cent are left. By the time the eighth grade is reached practically one-half of the pupils have dropped out. Cities having nine grades make a somewhat better showing.

In studying these figures it must be remembered that they do not show with absolute accuracy the percentage of entering pupils who remain to any given grade. Even if the membership of a grade is greater than the annual number of beginners, this does not prove that a few may not have already dropped out. A few—a very few—may have done so. In the same way it is possible that a few pupils are repeating in the upper grades where the membership is smaller than the number of beginners.

It is certain, however, that these exceptions are few in number and unimportant in their influence on the results. The figures in the table may be trusted as disclosing existing conditions with close approximation to the truth. In general terms it is true that no pupils drop out of school in the grades showing more than 100 per cent of the number of beginners. This is proved by the fact that in those cities where we have statistics showing the number of repeaters in each grade, we find that there are very few in the upper grades and practically none in the high schools. The fact of the matter is that a child who has passed the upper limit of the compulsory age period and fails does not remain to repeat the work of the grade, but simply drops out. In the grades where the membership is less than 100 per cent of the number of beginners the per cent given is approximately the per cent of entering pupils who reach that point.

The general tendency of city school systems is to keep all of the children to the fifth grade, to drop half of them by the time the eighth grade is reached and to carry one in ten to the fourth year of the high school. Diagram XII shows graphically this general tendency.

One fact disclosed by this diagram, which will come as a surprise to many, is that the drop between the final grammar grade and the first year of the high school is less than is that

between the two last years of the grammar course or the first two of the high school course.

There is a surprising variability among cities both in the amount of elimination and in the degree to which the lower grades are over-crowded. Of every ten children who start in the schools of Quincy, Massachusetts, as many as eight reach the eighth grade while two drop out. Of every ten who start in

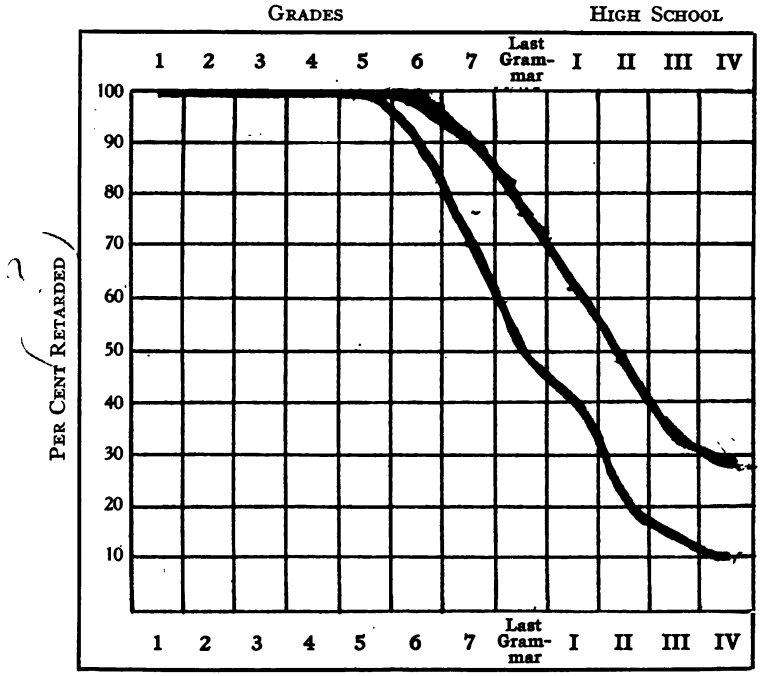

Diagram XII.—Showing general tendency of elimination in city school systems.

Camden, New Jersey, eight drop out before completing the elementary grades.

In Medford, Massachusetts, there is so little retardation in the lower grades that we find in the first grade only 122 per cent of the annual number of beginners. In Camden the retardation is so great that the first grade contains nearly two and a half times as many children as the annual number of entering children.

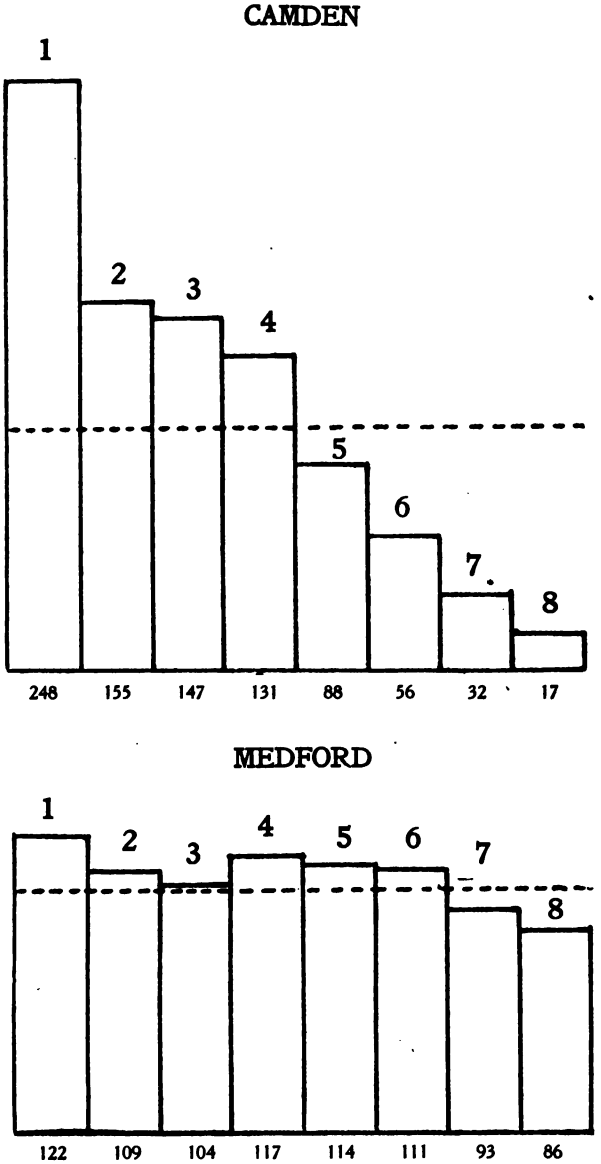

Diagram XIII.—Retardation and elimination. Conditions compared in Camden and Medford.

The contrast between conditions in these two cities is shown in Diagram XIII, in which the upright columns are proportionate to the membership of the grades as compared with the number of beginners. In each case the dotted line shows how high the columns would be if there were no retarded pupils repeating the work of the grades, and if no pupils dropped out.

In Camden the number of pupils in the lower grades is seen to be abnormally swollen, and the number of survivors in the eighth grade is painfully small. In Medford the number of repeaters is very small and the proportion of pupils reaching the eighth is very large. This great variability, so well illustrated in the cases of these two cities, is one of the most hopeful features of the whole problem of retardation and elimination, for what has been attained by some cities cannot be considered entirely out of reach of others.

TABLE 31.—SHOWING GRADES IN WHICH CHILDREN BEGIN TO LEAVE SCHOOL IN LARGE NUMBERS IN DIFFERENT CITIES.

Fifth Grade	*Sixth Grade*	*Seventh Grade*
Baltimore	Chicago	Boston
Camden	Cincinnati	Decatur
Erie	Cleveland	Denver
Memphis	Columbus	Fort Wayne
Newark, N. J.	Dayton	Grand Rapids
New Orleans	Hoboken	Kingston
Passaic	Jersey City	Los Angeles
Trenton	Kansas City	Malden
Wilmington	Louisville	Medford
	Newark, O.	Meriden
	New Brunswick	Minneapolis
	Newport	New Haven
	New York	Newton
	Paterson	Omaha
	Philadelphia	Portland, Me.
	Reading	Portland, Ore.
	Richmond	Somerville, Mass.
	St. Louis	Springfield, Mass.
	Utica	Springfield, Ohio
	Wheeling	Troy
	Williamsport	Wilmington
	Woonsocket	York

Not only do cities vary in the amount of elimination, but they differ as to the point where the children begin to drop out

of school. Quincy and Haverhill begin to lose their children in large numbers in the eighth grade. The colored children of Memphis and New Orleans show a considerable falling out at the fourth grade. Between these two extremes lie all the other cases. The cities recording loss of pupils in considerable numbers in the fifth, sixth and seventh grades are shown in Table 31.

The city of Quincy, Massachusetts, in carrying eighty-two children to the eighth grade out of each hundred who enter, takes to the end of the course nearly five times as many pupils as does Camden with its record of seventeen. Great as this variability is, however, it is not so marked as that disclosed when we compare the records of the different cities in respect to the proportion of pupils they carry to the fourth year of the high school.

We have already noted that the general tendency is to carry one in ten through the entire course. This record is greatly surpassed by a few cities. Table 32 shows the accomplishment in this regard of fifty-one cities.

The figures showing retention in the high school classes are not to be so fully trusted as are those for the grades, because pupils now in the high schools started some years ago and therefore to find the number of beginners the computations should in strict fairness be based on age figures of some years back. Moreover, in some cases computations have been necessary in order to put the figures for high school membership on the same basis as those for grade membership. However, the methods employed are as fair to one city as they are to another, and in any event the possible error is relatively small.

It is a matter for serious reflection that out of fifty-one cities no fewer than eleven carry 5 per cent or less of their children through the high school course, while eight others carry from 20 to 38 per cent through. The achievements of these latter cities show that a high measure of success in giving high school educations to a large percentage of all of the children is possible through means which already exist. It would seem that the methods employed by the cities at the head of the list might well be studied by the authorities of those near the foot.

TABLE 32.—SHOWING THE PERCENTAGE OF PUPILS RETAINED TO THE FOURTH YEAR OF THE HIGH SCHOOL IN FIFTY-ONE CITIES.

	City	*Per cent Retained*
1.	Newton, Mass.	38
2.	Waltham, Mass.	29
3.	Aurora, Ill.	25
4.	Newark, O.	25
5.	Decatur, Ill.	24
6.	Haverhill, Mass.	24
7.	Fitchburg, Mass.	23
8.	Kansas City, Mo.	22
9.	Somerville, Mass.	22
10.	Malden, Mass.	19
11.	Quincy, Mass.	18
12.	Kingston, N. Y.	16
13.	New Brunswick, N. J.	16
14.	Portland, Me.	16
15.	Dayton, Ohio	15
16.	Columbus, Ohio	15
17.	Minneapolis, Minn.	15
18.	New Haven, Conn.	15
19.	Denver, Colo.	14
20.	Medford, Mass.	14
21.	Omaha, Neb.	13
22.	Newport, R. I.	12
23.	Grand Rapids, Mich.	11
24.	Springfield, Mass.	11
25.	Woonsocket, R. I.	11
26.	Cleveland, Ohio	10
27.	Trenton, N. J.	10
28.	Utica, N. Y.	10
29.	Williamsport, Pa.	10
30.	York, Pa.	10
31.	Los Angeles, Cal.	9
32.	Meriden, Conn.	9
33.	Salt Lake City, Utah	9
34.	Fort Wayne, Ind.	8
35.	Louisville, Ky. (white)	7
36.	Springfield, Ohio	7
37.	Baltimore, Md.	6
38.	Boston, Mass.	6
39.	Passaic, N. J.	6
40.	St. Louis, Mo.	6
41.	Chicago, Ill.	5
42.	Cincinnati, Ohio	5
43.	Paterson, N. J.	5
44.	Reading, Pa.	5
45.	Hoboken, N. J.	4
46.	Camden, N. J.	3
47.	Jersey City, N. J.	3
48.	Newark, N. J.	3
49.	New York, N. Y.	3
50.	Philadelphia, Pa.	3
51.	Wheeling, W. Va.	3

In this study of elimination several points have been specially emphasized. Without making any attempt to comment on their educational significance it seems worth while to summarize them:

1. The general tendency of American city school systems is to carry all of the children through the fifth grade, half of them to the final elementary grade, and one in ten to the final year of the high school.

2. So far as leaving school is concerned, there is less of a gap between the final elementary grade and the first year of the high school than there is between the two last years of the grammar course or the first two high school grades.

3. There is a great variability between cities both in the amount of elimination and the point where it begins. There is an even greater variability in respect to retention of pupils through the high school.

In regard to the method by which the results are computed it must be remembered that no claim is made that it is accurate. It does not take the place of statistics showing the annual number of beginners, nor does it render such figures unnecessary. The method constitutes a substantially reliable measure for ascertaining certain most significant and necessary facts. It is simple and may be applied by anyone. It is offered with full comprehension of its limitations, but in the belief in its value for purposes of information and comparison.

TABLE 30.—SHOWING THE NUMBER OF CHILDREN BEGINNING SCHOOL ANNUALLY IN EACH OF FIFTY-NINE CITIES AND THE PER CENT WHICH EACH GRADE IS OF THE NUMBER OF BEGINNERS.—(*Continued.*)

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37. Louisville, Ky. (white)	1904–5	A.E.	2431	139	118	112	109	95	73	64	47	..	27	20	16	7
38. Meriden, Conn.	1907–8	E.G.D.	404	125	118	128	113	101	106	79	62	46	42	18	13	9
39. Richmond (colored)	1907	T.E.	591	217	150	128	116	96	67	46	..	..	10	8	8	..
40. Dayton, O.	*1906–7	T.E.	1214	120	121	129	124	111	85	68	46	..	32	29	19	15
41. Salt Lake City, Utah	1900–1	T.E.	1283	129	125	129	106	104	95	71	45	..	25	15	13	9
42. Jersey City, N. J.	*1906	E.G.D.	3267	193	144	139	120	99	81	55	45	..	15	7	4	3

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48. Utica, N. Y.	1906–7	T.E.	938	154	140	109	113	103	86	63	49	38	32	14	17	10
49. Passaic, N. J.	1907–8	T.E.	712	192	151	134	96	84	55	53	37	..	22	7	6	6
50. Reading, Pa.	1907	E.G.D.	1354	134	123	136	134	121	72	50	36	..	30	16	12	5
51. Paterson, N. J.	*1907	T.E.	1894	168	138	128	125	108	86	57	36	..	35	17	10	5
52. Troy, N. Y.	1903–4	T.E.	651	208	144	139	129	102	100	62	35	..	..	..	..	..
53. Philadelphia, Pa.	1908	E.G.D.	18007	170	153	140	119	97	70	46	32	..	19	13	9	3
54. Wheeling, W. Va.	*1906–7	T.E.	640	220	146	137	103	102	69	50	31	..	18	11	10	3
55. Woonsocket, R. I.	1908	E.G.D.	305	250	167	152	149	101	79	60	44	30	22	13	13	11
56. Baltimore, Md.	1906–7	T.E.	7586	193	158	147	121	88	65	46	29	..	20	14	9	6
57. Newark, N. J.	1906–7	T.E.	5084	204	148	141	125	94	68	43	28	..	23	9	5	3
58. Hoboken, N. J.	1906–7	T.E.	1121	200	144	112	111	100	62	46	27	..	18	12	4	4
59. Erie, Pa.	1901	E.G.D.	656	185	193	222	100	69	39	27	..	..	..	..	..	..
60. Wilmington (colored)	1905–6	E.G.D.	106	281	154	134	124	72	126	59	26	..	16	15	14	..
61. New Orleans, La. (white)	1907–8	T.E.	3058	228	159	143	117	79	54	39	26	..	16	10	11	..
62. Camden, N. J.	1906–7	T.E.	1475	248	155	147	131	88	56	32	17	..	10	7	5	3
63. Memphis (colored)	1908	E.G.D.	508	437	169	135	83	56	39	26	16	..	11	7	4	..
Medians				173	129	128	120	106	90	71	51	57	40	19	14	10

tion of the new standard, the question that immediately arises is, "How did Dr. Thorndike obtain his results?" This is a question much more easily asked than answered. In only a few places does he tell us how he obtained his estimate of the number of beginning pupils, and nowhere does he disclose specifically how his further percentages were computed. A careful study of his monograph makes it evident that he has taken as a starting point the average of the number of pupils found in grades 1, 2 and 3. This he has compared with the numbers found in other grades, modifying the results by an elaborate system of "corrections" concerning which we are left in the dark, save for the remark, "It would be unprofitable to anyone except the critical student of statistical problems for me to rehearse the details of this tedious process of corrections." Dr. Thorndike does, however, reveal in a few cases the process used for estimating the number of beginners. He says, "The main difficulty is in inferring from the number in grades 1, 2 and 3 the number beginning school in the course of a year. My correction for this is arbitrary. I have simply made the estimate of the number of pupils beginning school for any city, which seemed most likely in view of the comparative sizes of the populations of grades 1, 2, 3, 4 and 5, and of whatever other relevant information I possessed concerning the city.

"For instance, in Baltimore, * * * * I have, in view of other known facts about the city, taken the population of grade 2 as a measure of the number of pupils beginning school. In Denver, New Haven, St. Louis, Waterbury and Worcester I have judged that the $\frac{1+2+3}{3}$ figure was a correct representation of the number of pupils beginning school annually. In Trenton, where the first grade population is over twice the second in size, but the third practically equal to the second * * * * I have taken a figure about 3 per cent larger than the second grade population as the correct representation of the number of pupils beginning school."

Here, then, we have definite statements as to the measure adopted as representing the number of pupils beginning school. Where he has disclosed his method Dr. Thorndike states that he has assumed the number of beginning pupils to be as follows:

Baltimore, number of pupils in grade 2; Denver, average of grades 1, 2 and 3; New Haven, average of grades 1, 2 and 3; St. Louis, average of grades 1, 2 and 3; Trenton, 103 per cent of the number of pupils in grade 2; Waterbury, average of grades 1, 2 and 3; Worcester, average of grades 1, 2 and 3.

Among the seven cities in which we are permitted to know the method employed by Dr. Thorndike to discover the number of beginners, it is impossible to secure age figures in the cases of three. In the other cases they are available and we can compare the results by Dr. Thorndike's method with those of our new standard. In each case the most recent printed report available is used, no attempt being made to average figures for a series of years:

TABLE 35.—NUMBER OF BEGINNERS IN FOUR CITIES.

City	*Report Used*	*Dr. Thorndike's Method*	*By New Standard*
Baltimore	1906–7	12,002	7,586
Denver	1906–7	4,199	3,062
St. Louis	1906–7	9,367	7,413
Trenton	1903–4	1,248	1,039

In the above table the figure given for the new standard in the case of St. Louis is the result of finding the average of the age groups seven to twelve by use of the relative figures. This was necessary because, since membership in the several grades in St. Louis and age statistics are taken on different bases, it has been necessary to equalize them. In all other cases the original data are used.

Now, the significance of the comparative results in the above table is that Dr. Thorndike always gets as the number of beginners an impossibly large number. If he has done so in the cases of other cities it is plain that the entering classes have been estimated at too high a figure. The percentages of pupils continuing to the higher grades are then always too low before the "corrections" are applied. We have reason to believe that the "corrections" improve matters little in this respect.

The fundamental error in Dr. Thorndike's work seems to be that he has based his estimates of the number of beginners on the grade figures. In doing so he has been too largely influenced by the figures for the average of the first three grades. I am fully convinced that the number of beginners *will always* be less than the number in either the second or third grade, and that it *will never* be as large as the average of the first three grades.

If this is the case the raw material used to get his first results will invariably give Dr. Thorndike too large a divisor and as a result his quotients will always be too small. This is the underlying error of logic in the work, and there is no reason why we should assume that it has been corrected by some undiscovered system of corrections too subtle and intricate for comprehension by the ordinary mind.

This fundamental error in Dr. Thorndike's work not only gives him untrustworthy results for individual cities, but vitiates his general conclusions in regard to the tendencies of elimination. The difference between his conclusions as to the general tendency and those expressed in the preceding chapter as a result of the method there explained is graphically shown in Diagram XIV, in which the dotted line represents Dr. Thorndike's conclusions and the solid line those of the author.

Dr. Thorndike claims that elimination begins from the very first grade and continues throughout the course; the author is convinced that there is abundant evidence that the general tendency of our schools is to hold practically all of the pupils to the sixth grade.

Dr. Thorndike concludes that only about one-third of the pupils entering school graduate from an elementary school of seven grades or more. Our investigations show that the proportion is more nearly one-half.

We agree that less than one pupil in ten ever graduates from the high school.

After studying conditions in a number of cities of 25,000 population and over, Dr. Thorndike concludes that the conditions disclosed are probably much better than they are in the country as a whole. It would appear that this conclusion is based on the general principle that information gathered from

printed municipal reports is liable to the constant error of presenting conditions which are better than typical conditions. This is usually true because only the progressive town or city publishes its reports.

In the case in point this conclusion seems not to be justified. In the cases studied it is true to a remarkable degree that the

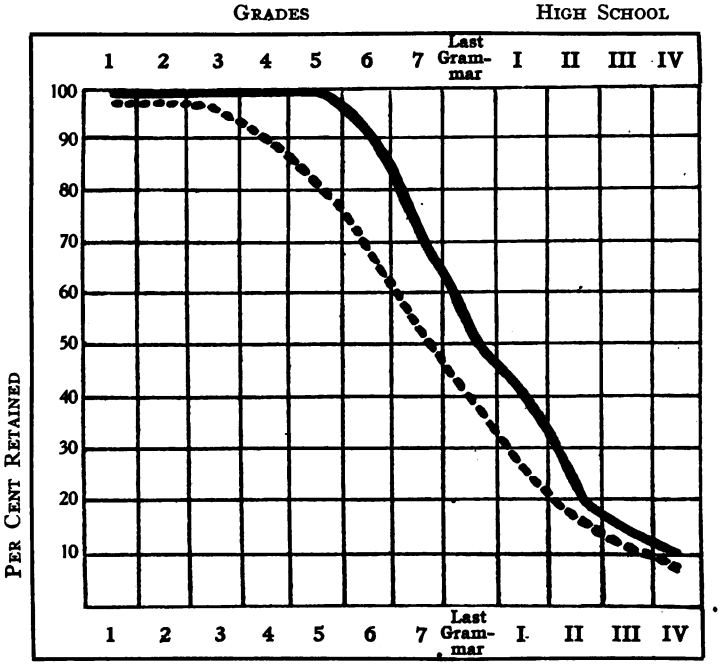

Diagram XIV.—General tendency of elimination as stated by Dr. Thorndike represented by dotted line, contrasted with results presented by the author represented by solid line.

large cities make poor records in respect to elimination. The best records are made by comparatively small places.

The idea that small towns, villages and small cities make better records in respect to retention of children in school than do large cities is confirmed by figures published in the report of the Commissioner of Education for 1907 giving the aggregate grade distributions in 386 cities of 8,000 population and over,

and in 366 towns and villages of less than 8,000 population. It seems probable in each case that the membership of the fifth grade is not far from equalling the annual number of beginners. Converting the two grade distributions into relative figures on the basis of 1000 children in the fifth grade, we have the following comparison:

TABLE 36.—SHOWING IN RELATIVE FIGURES GRADE DISTRIBUTIONS IN CITIES AND VILLAGES ON THE BASIS OF 1000 PUPILS IN THE FIFTH GRADE.

Grade	*386 Cities*	*366 Villages*
First Grade	1809	1748
Second Grade	1309	1262
Third Grade	1254	1208
Fourth Grade	1158	1137
Fifth Grade	1000	1000
Sixth Grade	837	851
Seventh Grade	667	720
Eighth Grade	477	553

It will be noted that in each of the lower grades the membership in the cities is more swollen than in the villages. In each of the upper grades the pupils are retained better by the villages than by the cities. In view of this evidence coupled with that gained from a study of conditions in the individual localities, the conclusion seems justified that as a rule small cities and villages retain their pupils better and have less retardation in their schools than do larger cities.

CHAPTER VII

RATES OF PROGRESS

THAT those who occupy their minds and their pens with the problem of the backward child forget that many pupils pass through our schools in less than the normal number of years, is a contention that is put forth with great frequency and some show of reason. Children "skip grades," are given "double promotions," and complete the elementary course in one or more years less than the time assigned by the course of study. It has frequently been argued that our school systems are well calculated to meet the needs of the average child, and that it is neither a cause for surprise nor alarm that some children complete the work in less than the normal time while others take a year or two more. The slow children—claim those who argue thus—are counterbalanced by the bright ones, and therefore the problem by no means merits the attention which is being given to it.

Little thought is needed to convince the student of this problem that no such counterbalancing effect is possible in the sense in which the term is here used. Even if some children do make more than normal progress, the fact does not do away with the necessity for considering most carefully the welfare of the slow ones. But this is not the crucial point in the arguments mentioned. The important thing to discover is whether it is true that our school systems have on the whole been so planned that they fit the abilities of the average child. Do most of the children succeed in keeping up with their classes and graduating from the eighth grade in eight years?

We know that the answer to this last question must be a negative one, for a large part of the children never succeed in graduating from the final grammar grade at all.

STATISTICS OF NORMAL, SLOW AND RAPID PROGRESS

The question of how nearly our courses of study correspond to the abilities of the average child is more difficult to answer. Information that would help us to decide this point is rare in the printed reports. Three cities publish tables showing how many pupils in each grade are doing the work of the year for the second time. That is, they show by grades the number of repeaters. These cities are Kansas City, Missouri, Springfield, Ohio, and Williamsport, Pennsylvania.

TABLE 17. NUMBER OF PUPILS MORE THAN ONE YEAR IN THE SAME GRADE IN THREE CITIES.

Grade	Kansas City		Springfield		Williamsport	
	Enrollment	*Repeating*	*Enrollment*	*Repeating*	*Enrollment*	*Repeating*
1	7774	1232	700	220	808	166
2	4578	500	771	127	610	70
3	4548	841	800	128	624	85
4	4682	1077	700	112	734	105
5	4304	933	672	85	640	91
6	4017	901	503	71	507	58
7	3174	350	454	53	420	36
8	.	..	340	9	360	17
9	.	..	..	..	240	15
Total	36909	6008	5774	795	4805	643

In the case of Kansas City the enrollment by grades is the total enrollment for the year. In the two other cases it is the enrollment at the end of the year. The figures giving the number of repeaters reduced to percentages of the grade enrollment are given in Table 18.

The figures show that conditions vary considerably in these cities. In Springfield and Williamsport the percentage of repeaters in the first grade is decidedly higher than in the second and it continues to decrease as the upper grades are reached. In Kansas City, on the other hand, the most difficult grade appears to be the

TABLE 38.—PER CENT OF PUPILS REPEATING WORK OF GRADES IN THREE CITIES.

Grade	*Kansas City*	*Springfield*	*Williamsport*
First Grade . . .	15.8	27.6	20.5
Second Grade . .	13.8	16.5	11.5
Third Grade . .	19.8	15.9	13.6
Fourth Grade . .	26.4	15.9	14.3
Fifth Grade . . .	28.3	12.6	14.2
Sixth Grade . . .	24.7	12.6	11.4
Seventh Grade . .	15.3	2.9	8.6
Eighth Grade . .	..	2.6	5.6
Ninth Grade . .	..	..	6.1
Total	19.8	14.9	13.1

fifth. These characteristic differences are shown in the following diagram:

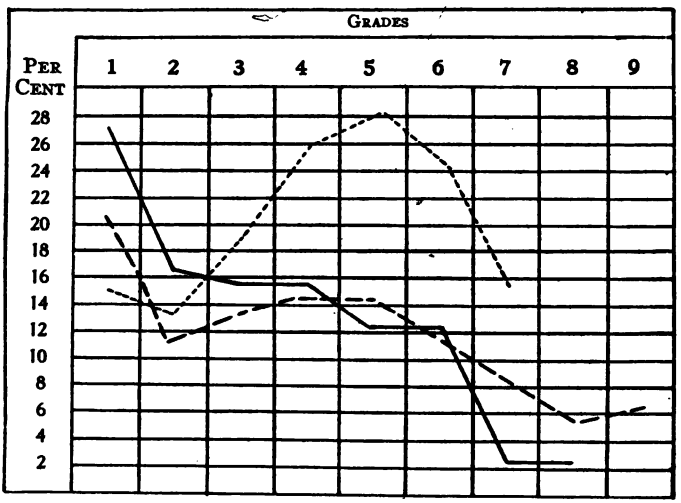

Diagram XV.—Per cent of pupils repeating work of grades. Springfield, O., solid line; Kansas City, Mo., dotted line; Williamsport, Pa., dashed line.

Information concerning progress more rapid than normal is almost as rare as is that telling of slow progress. Five cities

—New York, Philadelphia, Salt Lake City, Somerville, Massachusetts, and Springfield, Ohio—publish tables showing the number of "double promotions" or "special promotions."

TABLE 39.—TOTAL PROMOTIONS AND SPECIAL PROMOTIONS IN FIVE CITIES.

City	*Total Promotions*	*Special Promotions*	*Per cent of Special Promotions*
New York, 1908 . . .	969,998	42,692	2.5
Philadelphia, 1908 . . .	122,644	2,406	1.9
Salt Lake City, 1907 . .	21,259	242	1.1
Somerville, Mass., 1907 . .	9,125	154	1.6
Springfield, O., 1907 . .	4,755	7	.1

It is evident that in these school systems the pupils may be divided into three general classes as regards progress. First, those who receive regular promotion at the end of the term. These are the children who are making normal progress and they constitute the great bulk of the entire membership. Then come the children who fail of promotion. They are the ones who make slow progress. The last group is composed of those who receive special and double promotions. They are the children who are making rapid progress. The following table shows the size of each of these groups in the five cities:

TABLE 40.—SLOW AND RAPID PUPILS COMPARED IN FIVE CITIES.

City	*On Promotion List*	*Promotions*	*Not Promoted A*	*Special Promotions B*	*A Divided by B*
New York, 1908 . .	1,178,633	927,306	208,635	42,692	5.9
Philadelphia, 1908 .	148,812	120,238	26,168	2,406	11.8
Salt Lake City, 1907 .	24,760	21,017	3,501	242	14.4
Somerville, Mass., 1907	10,165	8,971	1,040	154	7.0
Springfield, O., 1907 .	5,614	4,748	859	7	124.1

The large number on the promotion list in New York is explained by the fact that the system of semi-annual promotions is in use in that city. Thus the number on the promotion list

during the year is approximately twice the number of children enrolled.

The figures in the last column show us that the pupils who are making slow progress are from six to fourteen times as numerous as are those who are making rapid progress, save in the exceptional case of Springfield, Ohio. In this latter city special promotions are so exceedingly rare that the slow pupils are more than 124 times as numerous as the rapid ones.

When the same data are reduced to relative figures, taking as a base in each case 1000 children on the promotion list, we have a new table which enables us to note in each city the relative sizes of the groups made up of the normal children, the rapid children and the slow ones, and compare the number of children making rapid with those making slow progress.

TABLE 41.—PUPILS MAKING SLOW, NORMAL AND RAPID PROGRESS COMPARED IN FIVE CITIES.

City	*On Promotion List*	*Promotions*	*Not Promoted*	*Special Promotions*
New York, 1908	1000	751	213	36
Philadelphia, 1908 . . .	1000	807	176	17
Salt Lake City, 1907 . . .	1000	843	147	10
Somerville, 1907	1000	877	108	15
Springfield, 1907	1000	844	155	1

If we read the figures as percentages, we see that the proportion of children regularly promoted varies from 75 per cent in New York to more than 87 per cent in Somerville. Those failing of promotion, or those making slow progress, vary from 10 per cent in Somerville to 21 per cent in New York. Those receiving special promotion—who are the children making rapid progress—vary from 1 per cent in Salt Lake City to more than 3 per cent in New York. If we leave out the exceptional case of Springfield we shall find that on the average in these cities the children making slow progress are eight and one-fourth times as numerous as are those making rapid progress.

RATES OF PROGRESS AMONG 9489 NEW YORK SCHOOL CHILDREN

Among the 20,000 children whose records were studied in the investigation conducted in New York City, to which reference has been made, there were 9,489 whose records were complete. These children were divided into two groups on the basis of age in grade. All children in the first grade were considered as of normal age if they were less than nine years old. Those above that age were considered as above normal age. Ten years was the limit for the second grade, eleven for the third, and so on. On this basis it was found that nearly 16 per cent of the children were above normal age for their grades.

It is evident that children entering the first grade for the first time at any age beyond eight years will of necessity be counted as above normal age and fall into the class "retarded," even if they progress normally at each regular time of promotion. By applying these standards of normal time and normal age for entering, it was possible to discover for each grade how many pupils were above normal age, how many of these were above normal age on account of late entrance, how many on account of slow progress, and the number who fell into the group as a result of the combined influences of starting late and progressing slowly. As a result we have the following table:

TABLE 42.—CAUSES OF RETARDATION, BY GRADES, OF 9489 PUPILS IN NEW YORK CITY.

Grade	*Membership*	*Above Normal Age*	*Above Normal Age because of Late Entrance*	*Above Normal Age because of Late Entrance and Slow Progress*	*Above Normal Age because of Slow Progress only*
1	2377	153	100	22	31
2	1710	219	91	29	99
3	1393	267	61	40	166
4	1032	189	63	26	100
5	949	257	51	31	175
6	786	213	50	24	139
7	719	117	22	14	81
8	523	79	19	7	53
Total	9489	1494	457	193	844

Converting our totals into relative figures, the table enables us to draw these significant conclusions:

Of each 100 retarded children

30 are retarded because of late entrance;

13 are retarded because of late entrance and slow progress;

57 are retarded because of slow progress.

It must be remembered that the standard by which we decide how many children are above normal age has been deliberately chosen with a view to putting in that class only the extreme cases. Many children take much more than the normal time to complete their grades, and yet on account of the early age at which they start they avoid falling into the over-age group. Again, others progress more rapidly than the rate planned for them by the course of study. The time in school of the 9489 is given by whole grades in the following table:

TABLE 43.—TIME IN SCHOOL, BY GRADES, OF 9489 PUPILS IN NEW YORK CITY.

Grade	Years in School												Total
	Less than 1 year	*1–2 years*	*2–3 years*	*3–4 years*	*4–5 years*	*5–6 years*	*6–7 years*	*7–8 years*	*8–9 years*	*9–10 years*	*10–11 years*	*11–12 years*	
1	1084	1185	88	19	1	..	..	..	..	..	..	..	2377
2	23	557	904	193	29	4	..	..	..	..	..	..	1710
3	..	33	371	659	256	65	8	..	1	..	..	..	1393
4	..	..	53	388	428	137	23	2	1	..	..	..	1032
5	..	..	..	30	206	390	218	76	24	5	..	..	949
6	..	..	..	1	23	135	387	163	57	17	3	..	786
7	..	..	..	..	8	50	176	276	142	55	11	1	719
8	..	..	..	..	..	6	26	151	220	96	22	2	523
Total	1107	1775	1416	1290	951	787	838	668	445	173	36	3	9489

Looking at the figures for the first grade, we see that one pupil has been in school more than four years without having entered the second grade. In the third grade we note that one pupil is in his ninth year of school life. The pupils who have been in school more than eight years without reaching the eighth grade

number 317. We also note that in each grade after the first some pupils have done the work more quickly than the regular rate. But it is not possible to discover from this table the true extent of normal progress, of progress more rapid than normal, and of that less rapid than normal. To show this, a table has been made up from the data obtained for each half grade. To render it more compact this table has been condensed so as to give the facts by whole grades and terms. A term is half of a school year.

TABLE 44.—EXTENT OF SLOW, NORMAL AND RAPID PROGRESS AMONG 9489 PUPILS IN NEW YORK CITY.

Grade	Terms less than Normal				*Normal*	Terms more than Normal										*Total*
	4	3	2	1		1	2	3	4	5	6	7	8	9	10	
1	..	..	..	7	1886	366	89	9	15	4	..	1	..	..	..	2377
2	..	..	..	46	994	376	203	56	20	11	4	..	..	..	..	1710
3	..	..	15	38	661	294	185	112	49	27	8	3	..	..	1	1393
4	..	..	32	105	457	214	118	70	20	12	2	1	1	..	..	1032
5	..	..	13	83	358	169	148	99	64	28	16	10	5	1	..	949
6	..	5	13	32	293	161	111	83	39	23	16	6	4	..	..	786
7	6	6	24	42	259	136	102	64	40	23	11	4	2	..	..	719
8	4	9	14	38	232	86	55	50	22	11	..	1	1	..	..	523
Total	10	20	111	346	5140	1802	1011	543	269	139	57	26	13	1	1	9489

The figures giving the same facts in aggregate, not showing the degree less than and more than normal, are to be found in Tables 45 and 46—in the first in actual figures, in the second in relative figures on the basis of 1000 children in each grade.

The conditions disclosed by these figures are significant. There are in these schools children who have spent as much as eight, nine, or even ten terms more than they normally should have to reach the grades they are in. The numbers who have spent two, three, or four terms too much are large. Nor must we conclude that such wide variations are found merely because we have here aggregate figures for a number of schools. An examination of the original records for the separate classrooms

TABLE 45.—SHOWING NUMBER OF CHILDREN BY GRADES WHO HAVE REACHED THEIR PRESENT STANDING IN LESS THAN NORMAL TIME, IN NORMAL TIME, AND IN MORE THAN NORMAL TIME IN NEW YORK CITY. ORIGINAL DATA.

Grade	*Membership*	*Less than Normal Time*	*Normal Time*	*More than Normal Time*
1	2377	7	1886	484
2	1710	46	994	670
3	1393	53	661	679
4	1032	137	457	438
5	949	51	358	540
6	786	50	293	443
7	719	78	259	382
8	523	65	232	226
Total	9489	487	5140	3862

TABLE 46.—RELATIVE FIGURES SHOWING PUPILS MAKING SLOW, NORMAL AND RAPID PROGRESS.

Grade	*Membership*	*Less Than Normal Time*	*Normal Time*	*More than Normal Time*
1	1000	3	793	204
2	1000	27	581	392
3	1000	38	475	487
4	1000	133	443	424
5	1000	54	377	569
6	1000	64	373	563
7	1000	109	360	531
8	1000	125	443	432
All Grades	1000	51	542	407

shows that children of widely varying ages and school experience are grouped together in one classroom. In the investigation boys and girls were found who had been four years in the first grade. One girl in the third grade had been in school nine years. Many children were found who had begun their school lives before their present classmates were born.

Looking at the figures for all grades at the foot of the table giving the relative figures, we find that if we reduce the figures

roughly to percentages, 5 per cent of the pupils have progressed to their present standing more rapidly than the normal rate; 55 per cent have progressed normally; and 40 per cent have made slower than normal progress. In the fifth, sixth and seventh grades, those who have made slower than normal progress outnumber all the others. If we consider the school membership as made up of the three groups—of those who have progressed more rapidly than normal, those who have made normal progress, and those whose progress has been slower than normal—and if we compute the degree of their variations from normal progress, we get the following results:

Of the entire membership 5 per cent have reached their present grades in 86 per cent of the normal time; 55 per cent have reached their present grades in 100 per cent of the normal time; 40 per cent have reached their present grades in 128 per cent of the normal time.

This is shown in graphic form in the following diagram in which the width of each rectangle represents the proportion of the pupils in the class, and the length the relative amount of time consumed in reaching their present standing:

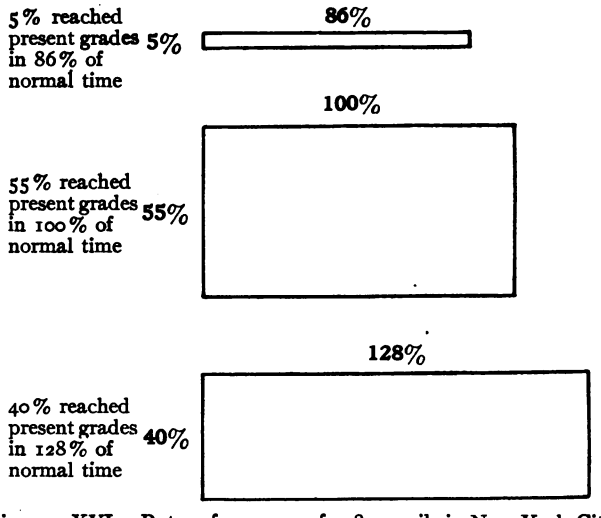

Diagram XVI.—Rates of progress of 9489 pupils in New York City.

We have seen that the number of children making slow progress is very much larger than the number making rapid progress. According to the available data the slow pupils are on

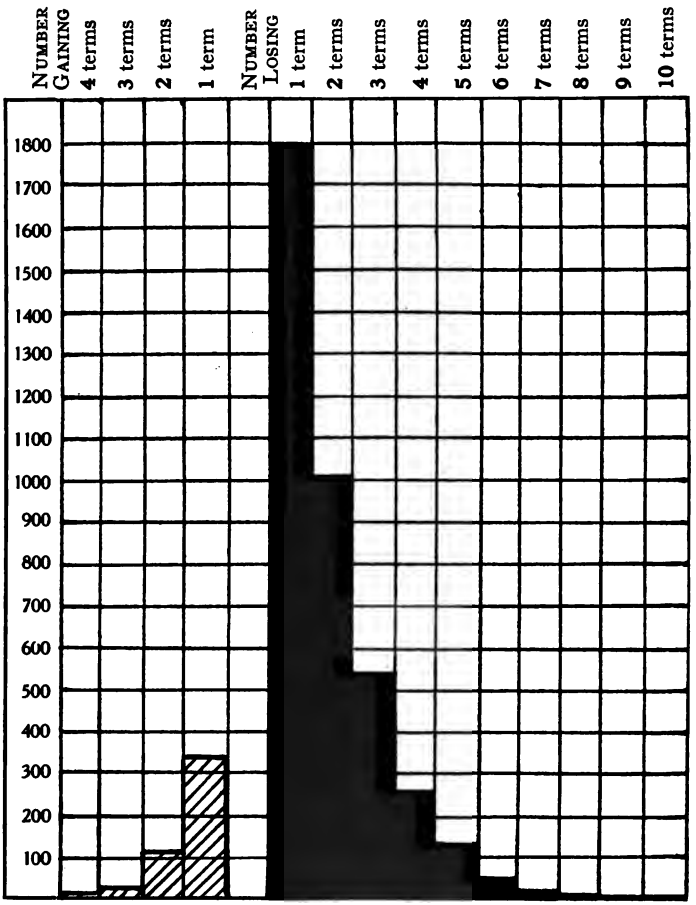

Diagram XVII.—Contrasting number of pupils making rapid progress with those making slow progress. Rapid pupils hatched; slow pupils black.

the average more than eight times as numerous as the rapid ones. That this is true not only in fact but in degree is shown by figures from New York and Baltimore. The slow children not only

greatly outnumber the rapid ones, but the time lost by the former is considerably greater in proportion than is that saved by the rapid ones.

In the table showing the time in grades by terms of the 9489 children whose records were studied in New York we noted that 487 made rapid progress and 3862 slow progress. The distribution of these pupils according to the number of terms lost or gained and the comparison between the two groups composed of slow and rapid pupils is shown in Diagram XVII.

Computing the time saved by the rapid pupils we find that it amounts to 668 terms. The time lost by the slow pupils amounts to 7855 terms, or nearly twelve times as much. In other words the slow pupils are eight times as numerous as the rapid ones, but they lose twelve times as much time as the rapid ones gain.

The Baltimore report for 1907 gives the number of pupils completing the work of the grades in different numbers of months. The number of pupils making rapid progress was 3034. The slow pupils numbered 12,261, or four times as many. The number of months saved by the rapid pupils amounted to 10,425; that lost by the slow ones to 92,994. The ratio is about nine to one. Here again the same characteristic difference is to be noted. The slow pupils are four times as numerous as the rapid ones, but the time lost by the former is nine times as much as that saved by the latter. It is probable that there are far more slow pupils in the schools of Baltimore than these figures indicate. They refer to pupils completing grades. Apparently there are many more who did not complete their grades and so are not included. The illustration is valuable in showing the relation between time lost and time gained rather than in showing how rapid pupils compare in number with slow ones.

PROGRESS OF AVERAGE CHILD

While all of the data discussed bear on important phases of the problem of rates of progress through the grades, they give us no measure by which we can answer the question how rapidly the average child in our city schools progresses. After

all, the crucial question is whether or not the average child can do the work of eight grades in eight years. There is little or no direct information available to answer this question.

If all of the children remained in school until graduation from the final grade we might arrive at an approximate answer by comparing the average age of children in the final grade with the average age in the first grade, but many children do not stay to graduate. Those who do remain are the survivors; the more fit, the most brilliant, the youngest.

Moreover, the average age of children in the first grade is not the average of the beginners, for the first grades, as we have seen, are never made up exclusively of beginners. They are made up of some children who entered school for the first time during the current year, and many who entered earlier. The average age of first grade children will always be somewhat more than the average age of the beginning children.

However, if we cannot measure the average time required to complete the course, we can measure with substantial accuracy that required to complete a definite part of it. Practically no children drop out of school before reaching the fifth grade. If then we compare the average age of first grade pupils in a given system with average age of the fifth grade pupils in the same system, we shall have a means of ascertaining how long it takes the average child in that city to make the journey from the first grade to the fifth. Obviously it should take him four years.

The data necessary for making this comparison have been secured in the shape of age and grade distributions from twenty-nine cities.

In Table 47 on the following page these cities are arranged according to the magnitude of the difference between the average age of the first grade pupils and that of the fifth grade pupils. As has already been stated this should be four years if all of the pupils made normal progress. How long it does take the average child to do the work of four grades in each of the twenty-nine cities is shown by the figures in the last column.

TABLE 47.—TIME REQUIRED TO DO THE WORK OF FOUR GRADES IN EACH OF TWENTY-NINE CITIES.

City	*Ave. Age First Grade*	*Ave. Age Fifth Grade*	*Difference*
1. Aurora, Ill., 1907	7.13	11.21	4.08
2. Meriden, Conn., 1907	6.68	10.92	4.24
3. Cincinnati, O., 1907	8.12	12.48	4.36
4. Trenton, N. J., 1903	7.14	11.50	4.36
5. Utica, N. Y., 1906–7	7.39	11.85	4.46
6. St. Louis, Mo., 1901–2	7.98	12.47	4.49
7. Wilmington, Del. (white), 1905–6	7.38	11.90	4.52
8. Portland, Ore., 1907	7.28	11.81	4.53
9. Columbus, O., 1906–7	7.56	12.15	4.59
10. Reading, Pa., 1907	7.23	11.82	4.59
11. Medford, Mass., 1907–8	5.96	10.56	4.60
12. Boston, Mass., 1907	6.74	11.39	4.65
13. Philadelphia, Pa., 1908	7.42	12.08	4.66
14. Los Angeles, Cal., 1903–4	7.59	12.30	4.71
15. Quincy, Mass., 1908	6.31	11.02	4.71
16. New York, N. Y., 1908	7.07	11.81	4.74
17. Ft. Wayne, Ind., 1906–7	6.80	11.55	4.75
18. Baltimore, Md., 1905–6	7.56	12.35	4.79
19. Malden, Mass., 1908	6.53	11.33	4.80
20. York, Pa., 1908	7.46	12.26	4.80
21. Woonsocket, R. I., 1907	7.02	11.85	4.83
22. Decatur, Ill., 1908	6.87	11.80	4.93
23. Springfield, Mass., 1907–8	6.71	11.66	4.95
24. Kingston, N. Y., 1908	7.22	12.20	4.98
25. Memphis, Tenn. (white), 1908	7.48	12.62	5.14
26. Memphis (colored), 1908	8.96	14.12	5.16
27. Troy, N. Y., 1903–4	6.92	12.12	5.20
28. Camden, N. J., 1905–6	7.13	12.51	5.38
29. Wilmington, Del. (colored), 1905–6	8.12	13.50	5.38
30. Kansas City, Mo., 1906–7	6.63	12.58	5.95
31. Erie, Pa., 1901	7.51	13.73	6.22

That in no city does the average child do the work of four grades in four years, is shown conclusively by these statistics. The average time consumed is 4.67 years. After the first grade is passed there is in most systems but little difference between the percentages of promotion in the different grades. Hence, we may assume that we can compute with fair accuracy from the figures we have how long it would take the average child to complete eight grades, if all of the children remained to complete the course. This computation gives us the following results:

TABLE 48.—SHOWING TIME REQUIRED TO COMPLETE EIGHT GRADES AT SAME RATE AS IS SHOWN BETWEEN GRADES ONE AND FIVE, IN TWENTY-NINE CITIES.

City	*Ave. years to Complete 8 Grades*
1. Aurora, Ill.	8.16
2. Meriden, Conn.	8.48
3. Cincinnati, O.	8.72
4. Trenton, N. J.	8.72
5. Utica, N. Y.	8.92
6. St. Louis, Mo.	8.98
7. Wilmington, Del. (white)	9.04
8. Portland, Ore.	9.06
9. Columbus, O.	9.18
10. Reading, Pa.	9.18
11. Medford, Mass.	9.20
12. Boston, Mass.	9.30
13. Philadelphia, Pa.	9.32
14. Los Angeles, Cal.	9.42
15. Quincy, Mass.	9.42
16. New York, N. Y.	9.48
17. Ft. Wayne, Ind.	9.50
18. Baltimore, Md.	9.58
19. Malden, Mass.	9.60
20. York, Pa.	9.60
21. Woonsocket, R. I.	9.66
22. Decatur, Ill.	9.86
23. Springfield, Mass.	9.90
24. Kingston, N. Y.	9.96
25. Memphis, Tenn. (white)	10.28
26. Memphis (colored)	10.32
27. Troy, N. Y.	10.40
28. Camden, N. J.	10.76
29. Wilmington (colored)	10.76
30. Kansas City, Mo.	11.90
31. Erie, Pa.	12.44

The average of these averages is 9.34 years. In order that the figure may represent with fair accuracy the rate of progress of the average child in the average city, we must add to it the difference between the average age of the beginner and that of the first grade pupils in general. In the investigation conducted in New York, to which reference has already been made, this difference averaged .8 of a year among some 2800 pupils.

If this is a fairly representative figure—and it probably is—we may safely increase our average of 9.34 years to 10 years, and say that the average child in the average city school system progresses through the grades at the rate of eight grades in ten years.

As a result of these studies of the rates of progress of children through the grades we can with safety formulate five general propositions:

1. The number of children who make slow progress is far greater than the number of those who make rapid progress, and the time lost by the former is very much greater than is the time saved by the latter.

2. From the available data it appears safe to say that for every pupil making rapid progress there are from eight to ten making slow progress, and for every term gained by the rapid pupils from ten to twelve are lost by the slow ones.

3. According to the New York investigation, among each 100 retarded pupils thirty are retarded because of late entrance; thirteen because of late entrance and slow progress; and fifty-seven because of slow progress.

4. The courses of study of our city school systems are adjusted to the powers of the brighter pupils. They are beyond the powers of the average pupils and far beyond those of the slower ones.

5. The average pupil cannot complete the work of eight grades in eight years. So far as can be ascertained, in no city does the average child regularly succeed in doing each year's work in one year. The average child in the average city school system progresses through the grades at the rate of eight grades in ten years.

CHAPTER VIII

THE MONEY COST OF THE REPEATER

"OUR OVERCROWDED SCHOOLS" was the headline of an article which appeared in a New York newspaper during the second week in January of this year. The article reached the desk of the writer as one of a collection of clippings on miscellaneous educational topics. The same week brought from different cities five other clippings, all somewhat similar in tone. From the Minneapolis *Tribune* of January eight came an article whose headlines told us: "2702 *Children in Basement Classes,* 60 *Rooms Below Street Level are now Occupied, Six New* 16 *Room Buildings are Needed to Eliminate Evil.*"

A Brooklyn newspaper described the congested condition of schools in that city as "scandalous and disgraceful." From Philadelphia came an article which in part read as follows:

"The Philadelphia school problem is the problem of the elementary schools. Of the school children of Philadelphia, 94 per cent are in the elementary schools and 6 per cent are in the high schools. There are more than 1000 children to whom Philadelphia has given a cold, cold shoulder. They stand at our school doors and knock, but no door is opened to them. Besides this 1000 and more, there are 15,255 children who have succeeded in getting one foot inside of the school. We call them 'half-timers.' In one Philadelphia schoolroom there are 116 children under one teacher."

These newspaper articles are noteworthy because they are typical. As many more, similar in tone and content and coming from all over the country, could be secured every week in the year. These words from the press tell us of the problem, and by their practically simultaneous appearance they show us how general it is. They reflect a condition that is very common

in our cities. The two great causes underlying this condition are lack of room and lack of money.

Where congested school conditions constitute a great problem, the over-crowding is almost always found in the lower grades. In considering the possibility of ameliorating such conditions, two lines of inquiry at once present themselves. First, if our lower grades are over-crowded, who over-crowd them? Are they filled with the children who ought to be in them, or are many seats occupied by children who ought to have passed on to the upper grades long ago? Secondly, if the lower grades are filled with repeaters, how much money is expended on them each year which rightfully ought to be expended in supplying increased school facilities and in increasing the number of pupils in the upper grades? This phase of the inquiry, then, resolves itself into a question of finding the number and by this means determining the cost of the retarded children who are repeating grades.

It cannot be denied that we are spending money in teaching large numbers of children the same things over again. If all the children had to reach a certain point before leaving school, this money would be saved if they could reach this point earlier; but such is not the case. Children are not required to make a certain degree of progress in the schools, but only to sit there a certain number of years. From the standpoint of the taxpayer who has no other interest in education than that of the tax rate, it is quite immaterial whether the money raised for schools be spent in training first grade pupils or eighth grade pupils.

Over-crowding means that we are not spending enough money on our schools. Retardation means—not that we are spending too much—but that we are spending it wastefully.

Viewed, then, from this economic or financial standpoint, the question is: How great is this waste?

How shall we determine the number of repeaters? The problem is by no means simple, but will repay careful examination. The term "retarded" is here applied, as previously explained, to the child who is below the proper grade for his age. Our schools are crowded with such children. They often constitute as much as one-third of the entire membership. Whatever

the causes may be that account for this condition, they may be grouped, as has been noted, under two general heads,—either the children have started late, or they have progressed slowly. In the case of the child who has started late, little blame can be laid at the door of the school. It is the child who progresses slowly with whom this study has to deal. When a boy or girl fails of promotion and repeats the work, the city has to pay for the term's schooling twice over.

Nor is the money waste the only serious result of repeating grades. Attention has already been called to the fact that the child who spends much more than the normal amount of time in doing the work in the lower grades finds himself at the age of fourteen, say in the fifth grade instead of the eighth, and, seeing that the prospect of promotion is still remote, drops out of school.

To illustrate how the number and cost of repeaters may be determined let us take the case of Columbus, Ohio. In the year 1906 the enrollment in all the day schools was as follows:

TABLE 49.—ENROLLMENT BY GRADES, COLUMBUS, 1906.

Grade	*Pupils*	
First Grade	3718	
Second Grade	2587	
Third Grade	2721	
Fourth Grade	2751	
Fifth Grade	2323	
Sixth Grade	1911	
Seventh Grade	1511	
Eighth Grade	1219	
Total		18,741
HIGH SCHOOLS		
First Year	916	
Second Year	675	
Third Year	480	
Fourth Year	328	
Total for High Schools		2,399
Normal School		78
Grand Total		21,218

The striking feature of this table is the falling off in membership in the successive grades. The first grade contains 3817 pupils, the eighth only 1219. As was explained in Chapter V,

the interpretation of these figures as meaning that in Columbus for 3800 children who enter school only 1200 get to the eighth grade would be erroneous. This is because each of the lower grades contains a certain number of repeaters. The fact that there are 3800 children in the first grade does not mean that 3800 children enter the school each year. In order to ascertain the number of repeaters in each of the lower grades we must, in each case, subtract the annual number of beginners from the actual membership.

The method by which the number of beginners may be ascertained has been fully explained in Chapter V, but in order to render the illustrative case of Columbus perfectly clear it may be well to repeat it briefly here. The pupils enrolled in all of the day schools in Columbus during the year 1905–6 were grouped by ages as follows:

TABLE 50.—ENROLLMENT BY AGES, COLUMBUS, OHIO, 1906.

Age	*Pupils*
6 years	1,894
7 years	2,006
8 years	2,123
9 years	2,143
10 years	2,178
11 years	2,110
12 years	2,150
13 years	2,164
14 years	1,747
15 years	1,083
16 years	703
17 years	507
18 years	264
19 years and over	146
Total	21,218

The average membership of the age group from seven to twelve inclusive is 2118. This number we may consider as representing with approximate accuracy the annual number of beginners in Columbus. Referring now to our table of grades we find that the first grade has 3718 children enrolled, and again in a similar way every grade up through the fifth has an enrollment considerably larger than the annual number of beginners. Therefore, we are safe in concluding that the first five grades contain

a considerable number of repeaters. Their total membership is 14,100. If there were no repeaters it would be only 10,590. The difference, or 3510, represents the number of children who are doing the work of their grades for the second time. This is 16.5 per cent of the total membership of the schools. Columbus expended on her school system during the year $674,650. 16.5 per cent of this sum is $111,317. This is the amount that it cost Columbus during the year 1905–6 to have her lower grades crowded with children who were doing the work for the second or third time.

The more important arguments that may be brought against this line of reasoning are two. First, the repeaters are not confined to the lower grades. A few—a very few—pupils get to the seventh or eighth grade, fail of promotion and repeat the work of the grade. It is even conceivable that a pupil might get as far as the last year in the high school and take the year's work twice. There are a few repeaters in the upper grades even after the age of compulsory attendance is passed. This influence tends to make the computed cost of the repeater too low.

On the other hand lies the second of the two arguments. This is, that in using the total cost of the schools as a basis from which to compute the cost of repetition we have included the expenditures for high schools, which are at a higher per capita rate than those for elementary schools, and this influence tends to make our computed cost of the repeaters too high. The answer to this is, that when the added cost of the high school instruction is distributed among all of the pupils in all the schools it becomes a very small factor indeed.

We have then two factors influencing our results, one tending to make them too high, the other tending to make them too low. Both of them are small and in practice they very nearly counterbalance each other.

There is some doubt as to the applicability of the system used in the case of Columbus to figures from other cities for the purpose of comparison, because the grade figures from different cities are gathered by different methods. In some places they are based on total enrollment, in others on average enrollment or enrollment at a given date. Can they then be made to give

comparable results? The answer is that where the grade figures are based on total enrollment, the age figures are also based on total enrollment, and so on for the other methods. Thus the relation between the number of children in the grades and the number who would be there were there no repeaters is not affected, and the resulting percentage which gives us the money cost of repeaters remains unchanged.

In the present state of our knowledge concerning retardation and elimination it is not pretended that our method can give more than a useful approximation to the facts. Exact measurement is out of the question. But, as in other cases, the only way to secure in the future more accurate information is to make the most of what we have, carefully pointing out its limitations. With more precise information as to the number of repeaters, and with more uniform financial methods determining the cost of instruction, we should come closer to the exact state of affairs.

Yet there is virtue in even an approximate measure. It is rarely the case that in its particular application its errors all work in the same direction. Given this possibility, however, it fails in any effort to make exact comparisons when there is comparatively little difference between the results. We would not, however, extend our comparisons beyond broad general lines, and within them the method we propose can be relied upon. It is a key which gives us access to illuminating facts showing the economic importance of the problem. In the Table 52 are shown the results obtained by applying the method to the known facts of grade membership, age groups and financial expenditures in fifty-five cities.

The validity of the method for computing the number of repeaters may be checked by means of data printed in the published reports of three cities giving the number of pupils who have been more than one year in the same grade. A pupil who spends more than one year in one grade is a repeater. The cities publishing this information are Kansas City, Missouri, Springfield, Ohio, and Williamsport, Pennsylvania. The substantial agreement between the computed results and the printed facts is shown by the following table:

TABLE 51.—COMPARISON BETWEEN COMPUTED RESULTS AND OFFICIAL FIGURES.

	Per cent Repeating (printed report)	*Per cent Repeating (computed)*
Kansas City	19.8	19.3
Springfield	14.7	14.8
Williamsport	13.1	13.3

It is evident that our method of computation gives results very close to the truth.

The conditions revealed in the table on pages 96 and 97 cannot be lightly passed over or safely disregarded. In the schools of these cities are more than 1,900,000 children. Of this number over 300,000 are repeaters. The annual cost of leading these children for the second or third or fourth time along the roads they have already traversed, reaches the astounding sum of thirteen and a half million dollars. If the school systems of these cities are fairly representative of American city school systems, then we are spending each year about twenty-seven millions of dollars in the wasteful process of repetition in our cities alone.

In a broad general way we have answered the question what is the money cost of the repeater, and on broad general lines we do not hesitate to describe it as waste. Elimination of waste means either a decrease of effort or an increase of effectiveness in the effort made. We are disposed to believe that in the present case the latter would be the main, perhaps the exclusive, result. But it is one which is well worth striving for. These economic considerations furnish an additional motive to those who are seeking light not only upon the extent of retardation, but on its causes and possible remedies.

Some expenditure for repeaters is unavoidable, but not all of it. It may well be questioned whether all the repetition in the first grade is necessary. When pupils are admitted any time throughout the year, there must always be some who at the end of the year or term cannot be promoted. But would not this be in large measure avoided if school authorities were to adopt the practice that no child, unless of school age, should be admitted for the first time to the first grade unless application for such admission were made in the first month of the school year or of the school term? To give a child two or three months' instruc-

TABLE 52.—NUMBER AND COST OF REPEATERS IN FIFTY-FIVE CITIES.

City	Pupils in All Schools	Repeaters	Cost of All Schools	Cost of Repeaters	Per cent Expended for Repeaters
1. Somerville, Mass., 1906-7	12,488	817	369,753	24,033	6.5
2. Medford, Mass., 1907	4,515	302	119,661	7,897	6.6
3. Waltham, Mass., 1908	3,301	276	104,504	7,106	6.8
4. Fitchburg, Mass., 1907	4,079	300	159,896	11,672	7.3
5. Newton, Mass., 1906	6,319	516	249,516	20,210	8.1
6. Haverhill, Mass., 1908	5,482	474	156,517	13,460	8.6
7. Meriden, Conn., 1907-8	4,241	380	166,555	148,233	8.9
8. Boston, Mass., 1906-7	90,876	9,241	4,453,054	449,758	10.1
9. Springfield, Mass., 1907	13,796	1,397	373,300	37,703	10.1
10. Newport, R. I., 1907	3,822	401	129,544	13,602	10.5
11. St. Louis, Mo., 1906-7	67,743	7,415	3,318,900	361,760	10.9
12. Aurora, Ill., 1908	2,219	251	67,714	7,651	11.3
13. Portland, Ore., 1906-7	16,937	1,947	668,077	76,160	11.4
14. Dayton, Ohio, 1906-7	11,998	1,404	478,398	55,972	11.7
15. Portland, Me., 1906-7	9,047	1,103	250,853	30,353	12.1
16. Utica, N. Y., 1906-7	9,733	1,194	249,110	30,391	12.2
17. Louisville, Ky., 1904-5	24,887	3,097	658,801	81,702	12.4
18. Malden, Mass., 1908	6,698	831	[illegible]53	23,678	12.4
19. New York, N. Y., 1907	561,560	70,871	38[illegible],139	4,901,290	12.6
20. Williamsport, Penn., 1908	5,226	699	[illegible]5,719	14,06c	13.3
21. Grand Rapids, Mich., 1906-7	15,629	2,078	487,174	65,281	13.4
22. Omaha, Neb., 1906-7	18,316	2,481	721,253	97,369	13.5
23. Newark, Ohio, 1908	3,293	461	104,605	14,540	13.9
24. Wilmington, Del., 1905-6	9,311	1,354	254,656	36,925	14.5
25. Lowell, Mass., 1908	10,568	1,563	384,296	56,491	14.7
26. Springfield, Ohio, 1907	6,537	971	155,393	22,998	14.8
27. Fort Wayne, Ind., 1906-7	6,234	932	234,163	34,890	14.9
28. Denver, Colo., 1906	35,013	5,498	1,279,846	200,935	15.7
29. York, Penn., 1[illegible]	6,596	1,050	129,600	20,606	15.9

TABLE [illegible].—NUMBER AND COST OF REPEATERS IN FIFTY-FIVE CITIES.—(*Continued.*)

City	Pupils in All Schools	Repeaters	Cost of All Schools	Cost of Repeaters	Per cent Expended for Repeaters
30. Richmond, Va., 1907	14,257	2,293	240,347	38,455	16.0
31. New Haven, Conn., 1908	20,641	3,349	538,466	87,231	16.2
32. New Brunswick, N. J., 1907–8	2,834	468	67,027	11,059	16.5
33. Paterson, N. J., 1907	19,053	3,164	[illegible]8,758	82,793	16.6
34. Reading, Pa., 1907	11,896	1,991	[illegible]471	65,041	16.7
35. Decatur, Ill., 1908	4,569	778	16[illegible]96	27,420	17.0
36. Columbus, Ohio, 1906–7	21,706	3,748	674,662	116,041	17.2
37. Hoboken, N. J., 1906–7	10,316	1,872	276,392	50,026	18.1
38. Quincy, Mass., 1908	6,222	1,127	136,150	24,643	18.1
39. Chicago, Ill., 1906	244,438	45,014	11,517,870	2,119,287	18.4
40. Kingston, N. Y., 1908	3,779	703	123,490	22,969	18.6
41. Cincinnati, Ohio, 1907	40,286	7,551	1,934,190	361,693	18.7
42. Minneapolis, Minn., 1907	44,683	8,465	1,368,504	258,647	18.9
43. Cleveland, Ohio, 1905–6	69,512	13,232	2,630,077	499,714	19.0
44. Kansas City, Mo., 1906–7	32,673	6,326	1,814,652	350,227	19.3
45. Philadelphia, Penn., 1907–8	157,317	32,693	4,330,661	896,446	20.7
46. Jersey City, N. J., 1906	29,902	6,411	1,184,143	253,406	21.4
47. Wheeling, W. Va., 1906–7	5,745	1,342	133,313	31,061	23.3
48. Newark, N. J., 1906–7	51,499	12,118	2,128,484	500,193	23.5
49. Passaic, N. J., 1907–8	7,164	1,688	198,467	46,639	23.5
50. Baltimore, Md., 1906–7	68,721	16,577	1,773,544	427,423	24.1
51. Erie, Pa., 1906–7	7,974	1,970	206,499	51,005	24.7
52. Woonsocket, R. I., 1908	3,364	980	93,528	27,216	29.1
53. New Orleans, La., 1907–8	25,229	10,488	760,794	225,965	29.7
54. Memphis, Tenn., 1908	13,903	4,186	476,924	143,554	30.1
55. Camden, N. J., 1906–7	13,648	4,147	397,968	120,584	30.3
Total	1,907,795	311,985	88,966,717	13,705,464	15.4

tion when we know from the outset that this will have to be repeated is surely an avoidable waste.

Even in the upper grades we cannot consider the money spent on doing again the work already done as entirely wasted, for we cannot be sure that such repetition is wholly ineffective from an educational viewpoint. But we may feel sure that more is lost than gained by the process of repeating. If it is in the nature of the child to be spurred on by failure to renewed effort, we may be very certain that the same child would be more effectively influenced by success. The effect of retardation is only slight in making school expenditures greater, but potent in making their effectiveness painfully less. To reduce retardation would greatly enhance educational efficiency rather than effect a financial saving.

CHAPTER IX

CAUSES OF LEAVING SCHOOL

THE question why pupils leave school is one that is often asked and seldom answered. Of course, the great majority of them go to work, but this fact is far from being an explanation of their leaving school. In the case of the great numbers of children who leave before completing the elementary course, if the question asked were why they do not continue longer in school, the answer would be, as stated previously in other connections, that upon reaching the end of the compulsory attendance period they find themselves in the fifth or sixth grade instead of in the eighth and, seeing that the prospect of graduation is remote, they leave and go to work.

TABLE 53.—CAUSES OF WITHDRAWAL OF PUPILS FROM HIGH SCHOOLS IN FIVE CITIES.

Cause	*Cambridge, Mass.* 1907	*Bay City, Mich.* 1904	*Decatur, Ill.* 1908	*Medford, Mass.* 1907	*Springfield, Ohio.* 1907	*Total*
To go to work	16	57	28	20	50	171
To help at home	8	..	..	..	..	8
Poor health	13	23	23	..	30	89
Failure in studies	11	..	..	..	..	11
Removal from city	6	19	15	11	28	79
To private schools	5	10	3	6	..	24
Marriage	1	..	1	..	..	2
Death	..	1	1	..	..	2
Sickness in family	..	..	14	12	..	26
Expelled	..	..	4	1	..	5
Dissatisfaction	..	..	16	3	..	19
Lack of ability	..	..	..	2	..	2
No reason	..	8	8	4	4	24
Miscellaneous	..	13	..	..	43	56
Total	60	131	113	59	155	518

In very few of the printed reports is any attempt made to analyze the reasons which cause pupils to leave school. Where such attempts are made we can seldom be sure whether the withdrawals enumerated are permanent or temporary. When we are told, for instance, that a certain number of children left school on account of sickness, we have no means of telling how many of them have left permanently and how many will return next year.

Bearing these limitations of withdrawal statistics in mind, we can with profit examine the available data bearing on the subject which has been gleaned from school reports. Five cities publish figures showing withdrawals from high schools.

In studying the table it must be borne in mind that the figures were gathered by different methods. It is quite possible that some of the reasons assigned may be given quite different interpretations in different cities. For these reasons, only the most general interpretations of the figures may safely be made. By adding together the figures under such headings as "To go to work" and "To help at home," "Poor health" and "Sickness in family," etc., the cases under the several causes may be grouped under six general headings:

TABLE 54.—REASONS FOR LEAVING HIGH SCHOOL. PERCENTAGES.

Cause	*Pupils*	*Per cent*
Work	179	34.5
Ill Health	115	22.2
Removal	79	15.3
Private Schools	24	4.6
Lack of Success	32	5.1
Other Reasons	89	17.2
	518	100.0

More than one-third of all the cases are attributed to "work," either at home or outside of it. As was before explained this is probably often not a real reason. While pupils who leave school very naturally go to work, it is probably comparatively seldom that they are compelled to leave for the purpose of seeking work.

Nearly one-fourth of the cases are ascribed to ill health, either of the pupils themselves or in their families. It is natural to suppose that in many of these cases the pupils return to school

after recovery. A fifth of the cases are ascribed to removal and transfer to private schools. In nearly all these cases it is to be supposed that the schooling continues in the new locations.

Under "Lack of Success" have been grouped the cases found under the headings "Failure in Studies," "Dissatisfaction" and "Lack of Ability" in the first table. It is noteworthy that the school authorities ascribe to these causes combined only 5 per cent of the cases. In reality it is probable that lack of success in school studies is the greatest single cause which impels pupils to drop out of school.

Turning now to the elementary schools we find slightly more data than for the high schools:

TABLE 55.—CAUSES OF WITHDRAWAL OF PUPILS FROM ELEMENTARY SCHOOLS IN SIX CITIES.

Cause	*Cambridge, Mass.* 1907	*Bay City, Mich.* 1904	*Decatur, Ill.* 1908	*Medford, Mass.* 1907	*Springfield, Ohio.* 1907	*Johnstown, Pa.* 1908	*Total*
To to go work	39	190	90	2	168	215	704
To help at home	21	..	..	..	..	..	21
Ill health	..	180	146	..	114	105	545
Removed from city	128	427	494	1	415	322	1787
To private schools	8	87	37	..	..	..	132
Death	1	3	4	1	..	16	25
Sickness in family	..	..	30	5	..	..	35
Visiting	..	..	17	..	..	..	17
Expelled	..	..	10	..	..	..	10
Dissatisfaction	..	..	2	..	..	..	2
No reason	..	29	23	2	15	53	122
Miscellaneous	..	28	..	..	54	..	82
Total	197	944	853	11	766	711	3482

Making in this case the same sort of general classification of the cases under five main heads as we made for the high school table we get the following:

TABLE 56.—REASONS FOR LEAVING ELEMENTARY SCHOOLS. PERCENTAGES.

Cause	*Pupils*	*Per cent*
Work	725	20.8
Ill Health	580	16.6
Removal	1787	51.4
Private Schools	132	3.8
Other reasons	258	7.4
	3482	100.0

In this table removal becomes such a large factor as to include more than half of the cases. Work occupies a position of less importance, and ill health retains nearly the same importance.

The net results of this study of the available data bearing on the reasons why children leave school are slight in degree and unsatisfactory in nature. Until more satisfactory statistics are gathered and careful studies made we must content ourselves with the general statement that failure in school studies is frequently followed by dropping out of school as soon as the attendance law permits. This is shown by the fact that very few children repeat grades after passing the compulsory attendance period. Unless compelled to remain in school pupils who fail drop out.

The data presented in this chapter have been given a place, not because they throw any real light on the problem of the specific reasons which impel pupils to leave school, for they do not; but rather because the question of cause is too important to ignore. Care has been taken to gather all of the available material in the printed reports. That the evidence is so inconclusive in character is greatly to be regretted. It is to be hoped that the significance of the problem will impel students of educational questions to give the matter more careful and searching study.

CHAPTER X

THE NATIONALITY FACTOR

THERE is no question of great national importance upon which the views of wise and able men are more widely divergent than upon the problem of immigration. Is the immigrant a blessing or a curse? The answers are as far apart as are the two words in meaning.

After making an exhaustive study of the results of immigration, the late General Francis A. Walker wrote, "These immigrants are beaten men from beaten races, representing the worst failures in the struggle for existence. * * * * * Europe is allowing its slums and its most stagnant reservoirs of degraded peasantry to be drained off upon our soil."

At a notable address made in Brooklyn last October, Dr. Newell Dwight Hillis said, "Great is the treasure for the Republic through herds and flocks, through shocks of corn and sheaves of wheat. Great also is the wealth through vineyard and orchard, but the greatest and most unmixed good fortune that has come to the Republic during the year will be its crop of immigrants."

Opinions of educational authorities as to the influence of the foreign child in our schools differ as widely as do the opinions of the publicists quoted above.

In order to realize the scope and localization of the problem we must consider how large a proportion of our population is made up of those of foreign parentage and in what parts of the country they are to be found.

The answers to these two questions are given in graphic form in the Diagram XVIII, which shows the proportion of the population of foreign parentage in different sections of the country and in the country as a whole.

The first lesson of this surprising diagram is that the problem is a great one, concerning as it does a large part of all our people.

The second lesson is, that it is a localized problem, affecting greatly the northern and western states and only slightly the southern states. In the northern and western states nearly one-half of all of the inhabitants are of foreign parentage, and in the southern states less than one-half. In the country as a whole about one-third of the people are of foreign parentage.

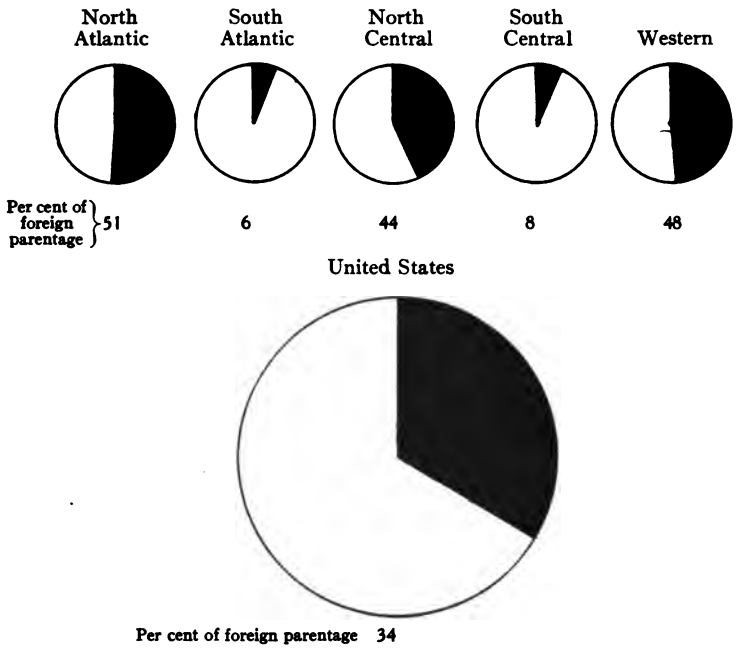

Diagram XVIII.—Population of foreign parentage in the United States, by groups of states.

ILLITERACY

Turning now to the question of the education of this third of our population, the first question is, "Do the schools reach every child?" The easiest way to answer it is through an investigation of the question of illiteracy; for we may certainly consider that the child who can neither read nor write has not been reached by the schools in any very effective way.

In the United States as a whole there are 107 illiterates

among every 1000 persons. In Germany, Norway, Sweden and Denmark there are about two in every 1000. In the state of New York there is one illiterate in every eighteen voters. Among recruits in the German army there is one illiterate in every 2500, and among volunteers in the German navy one in every 10,000.

This is striking, and what is more it is humiliating to our national pride. But it is still more remarkable and still more

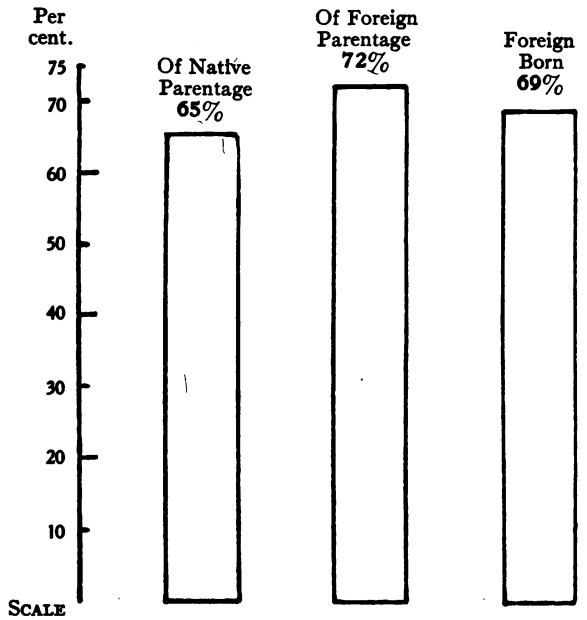

Diagram XIX.—Per cent of the white population of the United States in school at the ages five to fourteen.

humiliating that in the United States as a whole, among native white children of native parents forty-four in every 1000 are illiterate, while among native white children of foreign parents nine in 1000 are illiterate.

This pretty conclusively answers our first question, "Do the schools reach all the children?" They do not. But in the country at large they reach the child of the foreigner more generally than they do the child of the native born American.

This conclusion has been reached from the circumstantial evidence based on illiteracy. It is corroborated by the direct evidence taken from the census showing the proportion of white children five to fourteen years of age in school in three different classes.

As Diagram XIX shows, of the native whites of native parents 65 per cent are in school, of the native whites of foreign parents 72 per cent, and of the foreign whites 69 per cent. The salient point here is that at these ages, which correspond to the years of elementary school attendance, the native born Americans make the poorest showing.

THE RACES AND RETARDATION

Up to this point we have been referring to the immigrant and the school as though we were handling one problem. We are not. We are considering a great many different problems. The question of how to handle a Scotch immigrant child is very different from that of how to treat an Italian. The educating of an English boy is not at all the same task as the educating of a Russian. In past years we have heard a good deal of the changing character of our immigration—that the northern races are sending fewer and fewer to our shores and the southern and western races more and more. It has been claimed that relatively speaking the former races were desirable and the present comers are undesirable. Few facts have been put forward in support of these claims, and so far as can be ascertained none at all have been cited to show what races succeed best in our schools, and which ones worst.

During the spring and summer of the year 1908 an investigation of the problem of the comparative success of the children of different nationalities in fifteen schools was made as a part of the investigation conducted in the public schools of New York City. After the 20,000 records were gathered the first step was to tabulate them with respect to the degree of advancement of the pupils in comparison with their ages. In other words, the records were studied to find out how many children were of normal age for their grades and how many were above normal age, or retarded. A liberal standard was adopted. All children up

to the age of nine years were considered as of normal age for the first grade. Ten was the limit in the second grade, eleven in the third, and so on. The result was that among 20,000 children 23 per cent were retarded.

In the fifteen schools a number of nationalities were represented. When the records of the pupils were tabulated for retardation by different nationalities the results were surprising. The per cent of retardation among the different nationalities was as follows:

TABLE 57.—RETARDATION BY NATIONALITIES IN NEW YORK CITY. PERCENTAGES.

Nationality	*Per cent Retarded*
German	16
American	19
Mixed	19
Russian	23
English	24
Irish	29
Italian	36

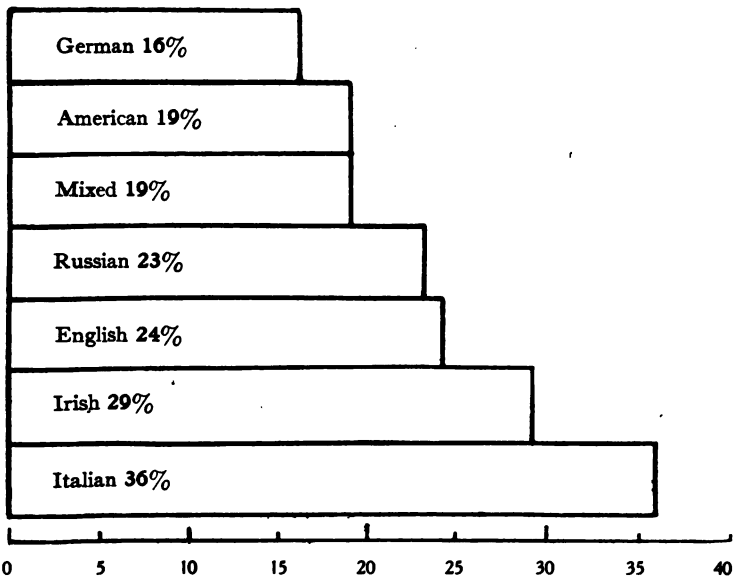

Diagram XX.—Retardation by nationalities in New York City. Percentages.

These results are not caused by merely local conditions in the several schools. The figures were retabulated individually by schools with no change of results. The Germans made everywhere very good records, the Americans somewhat poorer ones, and so on down to the uniformly poor records of the Italians. Nor did the section of the city seem to have anything to do with it.

Opinions may differ radically as to the significance of these figures and the causes of the conditions disclosed, but one thing is certain. In all intensive studies of retardation, the nationality factor is important and must be taken into account.

THE LANGUAGE DIFFICULTY

There is another lesson that these figures teach, and that is in respect to the so-called language difficulty theory,—the theory that children of foreigners on arriving in our schools, being ignorant of the English language, lose on account of this handicap one, two or more years before they are able to carry the work of the schools. That this theory is not substantiated by the figures from New York City is very evident from a mere inspection of the relative position of the English and non-English speaking groups. The group making the best showing are the Germans who are non-English speaking people. Then follow the Americans, then the mixed and the Russians who again are non-English speaking, then the English and Irish whose native language is English, and finally the Italians who, of course, are subject to the language handicap. Plainly, so far as these groups are concerned, no connection can be traced between school progress and the language difficulty. Nor is this new in the field of applied pedagogy.

The results of the investigation in New York do not constitute all of the evidence tending to show the relatively slight importance of the language difficulty in the educational assimilation of non-English speaking peoples. The experience of the department of education of Porto Rico in changing its schools from the Spanish to the English basis strongly substantiates it. The change was effected with little or no loss of time on the part of the pupils.

In an investigation conducted by Superintendent James E. Bryan of Camden, New Jersey, during the school years 1904–6,

it was proved that ignorance of the English language constituted so slight a cause of retardation that it was not even necessary to include it among the causes assigned.

Principal J. M. McCallie of Trenton, New Jersey, reported before the New Jersey State Conference of Charities and Corrections in 1905 that among 146 cases of badly retarded children studied by him in that city in only eight cases could English be ascribed as a cause of retardation. In this connection Mr. McCallie says, "This fact, I think, will tend to weaken the arguments so often put forth that the foreign element lacking a speaking knowledge of English is the cause, to a great extent, of so much backwardness in our public schools."

RETENTION OF AMERICANS AND FOREIGNERS THROUGH THE GRADES

Thus far in the discussion of our problem we have been dealing with the question whether or not the immigrant is reached by our school system and to some degree with the manner in which he is reached. But we have not considered the extent to which he is reached. We have dealt with the fact, not with the degree. These two factors are not at all the same. It may well be that in a given city all of the foreigners are in school long enough to learn how to read and write, but that none of them stay long enough to get more than the mere rudiments of the three R's. At the same time in the same city it may be that some of the Americans escape school entirely while most of them continue on through the high schools and eventually become leading members of the community. The fact that some foreigners show a smaller percentage of retardation than the Americans has only a slight bearing on this question.

In the endeavor to shed light on the problem a thorough study has been made of the available data in school reports. In most cities the existence of the foreigner is entirely ignored, so far as the printed reports go, but not in all.

Let us consider first four cities which report the number of foreign born in the elementary schools and in the high schools.

Translating the figures into percentages and expressing the results graphically we have the following diagram:

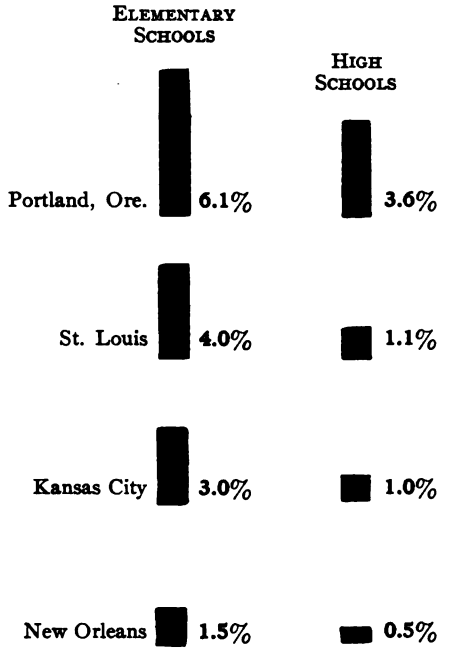

Diagram XXI.—Per cent that foreign born pupils are of all pupils in elementary and high schools in four cities.

In Portland, Oregon, only a little more than half as large a proportion of foreigners is found in the high schools as in the elementary ones; in Kansas City and New Orleans one-third; and in St. Louis little more than one-quarter as large a proportion.

The lesson taught by the figures shows conclusively that the foreigners do not continue to the high schools in large numbers.

The next available data come from the city of Buffalo. There the figures are given, not for foreign born only, but for native born of foreign parents as well, and so include a large proportion of the entire school population. The same tendency is however just as manifest. (Diagram XXII.)

Here we see that even in the second generation those of re-

cent foreign extraction fail to take as extended advantage of their educational opportunities as do the Americans.

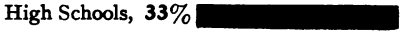

Diagram XXII.—Pupils of foreign parentage in schools of Buffalo.

Our next results are drawn from the only two cities in the country which give the number of pupils hearing a foreign language at home, and the figures are given by grades so that we can trace

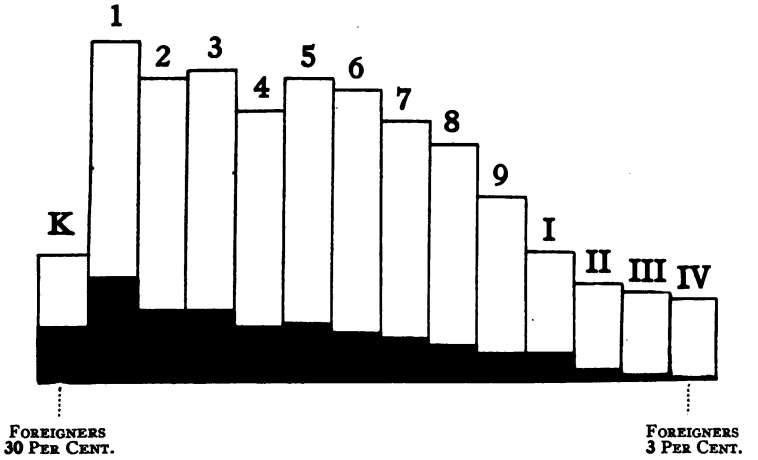

Diagram XXIII.—Foreign children in the schools of Haverhill, Mass. Black portion represents foreigners. They are 30 per cent of all in the kindergarten and only 3 per cent of all in the last year of the high school.

the process all the way. These cities are Haverhill, Massachusetts, and New Britain, Connecticut. (Diagrams XXIII and XXIV.)

The result is as before. The foreigners are found in consid-

erable numbers in the lower grades and the proportion steadily diminishes until it reaches very small dimensions indeed in the upper ones and the high school.

Something of an improvement on these statistics are those published in Reading, Pennsylvania, where the children of foreign parentage are compared with the whole number in each grade from the first to the high school. (Diagram XXV.)

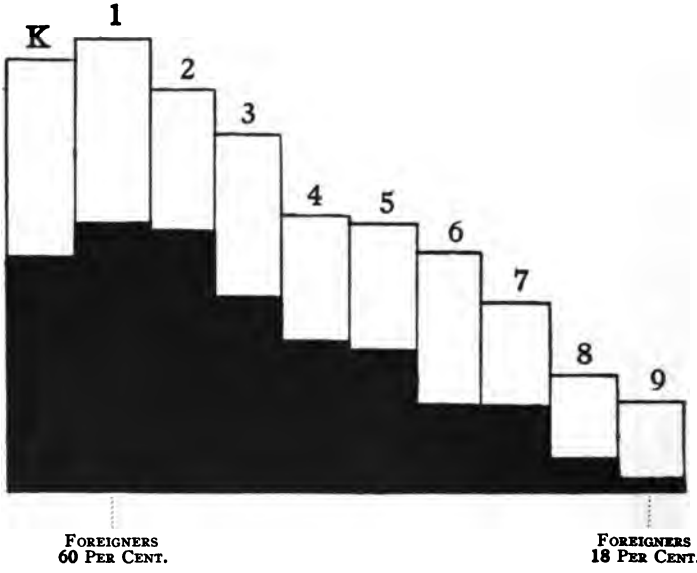

Diagram XXIV.—Foreigners in the schools of New Britain, Conn. Black portion represents foreigners. They are 60 per cent of all in the first grade and only 18 per cent in the ninth grade.

Here again the same tendency is apparent. The children of foreign parentage constitute 17 per cent of the membership in the first grade and this percentage steadily reduces until it becomes 5.5 per cent in the high school.

This brings us to our last case, that of Worcester, Massachusetts. Here we seem to have the one superintendent in the country who realizes the nature and importance of the problem and who prints figures showing the Americans, the native born of foreign parents, and the foreign born, all the way from the kindergarten to the high school. (Diagram XXVI.)

In the kindergarten the Americans are only 36 per cent of all. The proportion increases until we find them constituting nearly 60 per cent of the high school membership. The native born of foreign parents, that is, the children of immigrants, start

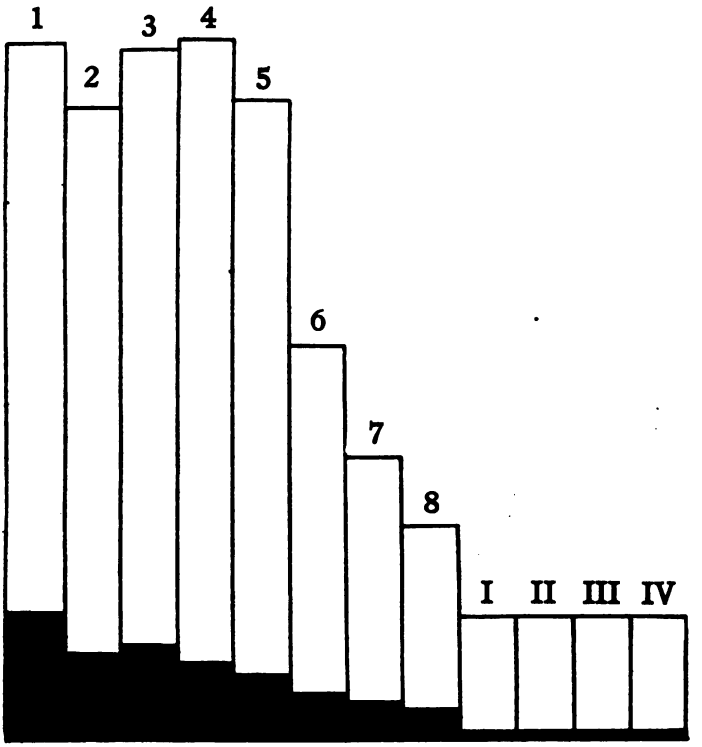

Diagram XXV.—Children of foreign parentage, in the schools of Reading, Pa. They are 17 per cent of all in the first grade and only 5.5 per cent in the high school.

with 56 per cent and finish with 37 per cent. The foreign born, the child immigrants themselves, start with 7.3 per cent and end with 3.8 per cent.

Here we have expressed in the results from one city the tendencies noted in the others. The Americans make the best show-

ing. The children of immigrants make the next best showing and the foreign born children the poorest.

There are three possible explanations of the fact that the foreigners always constitute a larger proportion of the membership of the lower grades than they do of the upper grades and the high school. Either there is more retardation among the foreigners than among the Americans, thus swelling their numbers in the lower grades; or there is more elimination among them, thus

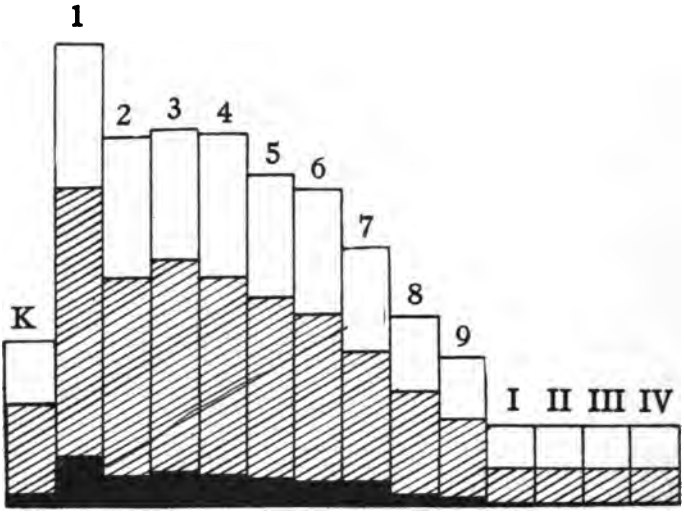

Diagram XXVI.—School children in Worcester, Mass., showing increase in proportion of Americans (outlines), and decrease in proportion of children of foreign parentage (hatched) and foreign birth (solid black) in the upper grades and the high school.

thinning their numbers in the upper grades; or both of these forces are operative.

In the endeavor to discover whether any correlation exists between the per cent of population of foreign parentage in the cities studied and the per cent of beginning pupils retained to the final elementary grade, the figures showing both sets of facts for forty-eight cities have been tabulated together. These cities were ranked in the order of the per cent of pupils they retain to the final elementary grade. The first sixteen cities on the list—

those making the best records as respects retention of pupils—retain on the average 68 per cent. In these same cities the average percentage of persons of foreign parentage in the population, according to the census, is 53. In the second group of sixteen cities—those making medium records—the average per cent of pupils retained is 49, and the average percentage of foreign parentage in the populations is again 53 as in the first group. In the third group—those making the worst records—the average percentages are 33 and 58 respectively. Expressing this in a table we may compare conditions in the three groups:

TABLE 58.—COMPARISON BETWEEN RETENTION OF PUPILS IN SCHOOL AND PER CENT OF FOREIGN PARENTAGE IN THE POPULATIONS, IN THREE GROUPS OF CITIES.

	Ave. Per cent of Pupils Retained to Final Elementary Grade	*Ave. Per cent of Persons of Foreign Parentage in the Populations*
First group of sixteen cities . . .	68	53
Second group of sixteen cities . . .	49	53
Third group of sixteen cities . . .	33	58

It is very evident that little or no correlation is disclosed between retention of pupils and the foreign element in the populations of the same cities.

Taking into consideration all of the facts which have been reviewed we may conclude that:

1. While the nationality factor has a distinct bearing on the problems of retardation and elimination there is no evidence that these problems are most serious in those cities having the largest foreign populations.

2. As a rule, children of foreign parentage drop out of the highest grades and the high school faster than do American children.

3. In the United States there are more illiterates among the native whites of native parentage than among the native whites of foreign parentage.

4. In the country as a whole the proportion of children five to fourteen years of age attending school is greater among those of foreign parentage and foreign birth than among Americans.

5. In an examination conducted in New York City children of the different nationalities were found to differ radically as to ability in school work, the Germans making the best showing, the Italians the worst.

6. Wherever studies have been made of the progress of children through the grades, it has been found that ignorance of the English language does not constitute a serious handicap.

The whole problem of the immigrant is a vast one and one that continues to increase rather than to diminish. Moreover, it is certain that no matter what legislation may be enacted, it is a problem that will be of the first importance for a long time to come. The essentially hopeful aspect of the situation is that although the problem itself is increasing in magnitude, this increase is not so rapid as the development of our school system in scope and efficiency.

CHAPTER XI

PHYSICAL DEFECTS AND SCHOOL PROGRESS

ONE of the most important objects of the investigation conducted in the New York schools was to determine, if possible, the relation between physical defectiveness and school progress. To this end the records of the physical examinations given the pupils by the physicians of the Board of Health were carefully studied in every case where they existed.

Before coming to our own contribution, however, it seems wise to present the general results from three other recent studies; namely, those of Dr. Walter S. Cornell and Dr. S. W. Newmayer in Philadelphia, and the investigation conducted by Superintendent James E. Bryan of Camden.

DEFECTS AMONG "EXEMPT" AND "NON-EXEMPT" CHILDREN

The results of some of Dr. Cornell's investigations were published in an article in the *Psychological Clinic* of January, 1908. Among 219 children of both sexes from six to twelve years of age in one school in Philadelphia, he found:

TABLE 59.—COMPARATIVE STANDING IN STUDIES OF 219 NORMAL AND DEFECTIVE CHILDREN IN PHILADELPHIA.

	Average per cent Attained
Normal children	75
Average children	74
General defectives	72.6
Children having adenoids and enlarged tonsils	72

Results showing such negligible differences as these between the classes will come as a surprise to those who have gathered their opinions on the subject from current discussion.

In another investigation the children of five schools were

examined for physical defects. They were divided into so-called "exempt" children, or those whose work had been so thoroughly satisfactory that they were advanced to higher grades without examination, and "non-exempt" or those whose work was less satisfactory.

TABLE 60.—PER CENT OF EXEMPT AND NON-EXEMPT CHILDREN HAVING PHYSICAL DEFECTS.

	Exempt	*Non-Exempt*
Number examined	907	687
Per cent defective	28.8	38.1

Here we seem to have a showing more like the one we should naturally expect. The percentage of defectives is much higher among the "non-exempt" than among the "exempt" children. We are given no details, however, as to the defects found and so cannot tell which particular sort or sorts of defects caused the preponderance on the side of the "non-exempt" pupils.

Light seems to be thrown on this question by the results of one of Dr. Newmayer's investigations, conducted also in the schools of Philadelphia, covering examinations of 5005 children of whom 3587 were "exempt" and 1418 "non-exempt." Defects were found among them as follows:

TABLE 61.—PHYSICAL DEFECTS FOUND IN EXEMPT AND NON-EXEMPT CHILDREN.

Defect	Exempt Children		Non-Exempt Children	
	Number Examined	*Per cent*	*Number Examined*	*Per cent*
	3587	100.0	1418	100.0
Defective vision	371	10.0	171	12.0
Defective hearing	49	1.4	29	2.0
Defects of nose	54	1.5	21	1.5
Defects of throat	137	3.8	53	3.7
Orthopedic defects	25	.7	25	1.8
Mentally defective	6	.1	80	5.6
Skin diseases	918	26.0	423	30.0
Miscellaneous	214	6.0	128	9.0
Total	1774	49.0	930	65.0

With two exceptions the defects are distributed between the two classes with surprising equality, the brighter pupils seeming to be afflicted in just the same degree as their duller companions. The two exceptions occur in the cases of "mental defects" and "skin diseases" both of which are much more frequent among the less bright children. That the former should be more common among them is of course to be expected. That they should be found to be suffering more commonly from skin diseases is probably rather to be considered a reflection of poorer home conditions than as having a direct connection with their mental aptitudes.

In connection with the somewhat inconclusive character of the returns in Philadelphia the judgment of Dr. Cornell is of interest. He writes that he believes that the educational result in our public schools suffers a discount of about 6 per cent in the case of physically defective children.

During 1906, Superintendent of Schools James E. Bryan conducted extensive investigations in the schools of Camden, New Jersey. In all 10,130 children were given physical examinations. Of these children 8110 were of normal age and 2020 retarded. The results of the vision and hearing tests were as follows:

TABLE 62.—DEFECTIVE EYESIGHT AND HEARING AMONG 10,130 NORMAL AND RETARDED CHILDREN IN CAMDEN, N. J.

	Normal Age Children	*Retarded Children*
Number examined	8110	2020
Per cent having defective vision	27.1	28.9
Per cent having defective hearing	3.7	5.8

Here again one would hesitate to draw conclusions as to any relation between retardation and defective vision and would feel doubtful in the case of defective hearing.

Among the children studied 1852 had failed of promotion and these children were given still further examinations. Among them 1279 were of normal age and 573 were retarded. The results were as follows:

TABLE 63.—PHYSICAL DEFECTS AMONG NORMAL AND RETARDED CHILDREN WHO FAILED OF PROMOTION IN CAMDEN, N. J.

	Normal Age Children	*Retarded Children*
Number examined	1279	573
Per cent having defective vision	·51	40
Per cent having defective hearing	14	11
Per cent having bad health	21	21
Per cent attending irregularly	30	40

This table gives still further surprises. The children of normal age actually show a higher percentage of defective vision and hearing than do the retarded ones, and the significant feature disclosed seems to be that irregular attendance rather than physical defects is the important factor affecting school progress.

Still another investigation was made to classify the causes of the backwardness of the 2020 children who were over age for their grades. The causes to which the excessive age of those pupils was attributed are shown in the following table:

TABLE 64.—CAUSES ASSIGNED FOR EXCESSIVE AGE.

Cause	*Per cent*
Age upon starting	21.2
Slowness	21.0
Absence	28.5
Dullness	12.0
Ill health	9.6
Defects other than sight and hearing	3.9
Mental weakness	3.7

Two points in this table are significant: First, the results of the Camden investigation decidedly support the contention that physical defects constitute *a* cause but not *the* cause of retardation; secondly, that the bearing of physical defects on school retardation does not appear to be very great. Under the captions "ILL HEALTH" and "DEFECTS OTHER THAN SIGHT AND HEARING" are found 13.5 per cent of the cases. Under "AGE UPON STARTING" and "ABSENCE" are found 49.7 per cent.

IMPORTANCE OF THE AGE FACTOR

Among the 20,000 pupils examined in the New York City investigation were 7608 who had been given physical examinations

by the physicians of the Board of Health. Of these 7608 pupils, 6084 fell within the normal age group and 1524 in the above normal age group. The following table shows the percentage of physically defective pupils in each group by grades:

TABLE 65.—PER CENT OF NORMAL AND RETARDED CHILDREN HAVING PHYSICAL DEFECTS, BY GRADES.

Grade	*Normal Age. Per cent Defective*	*Above Normal Age. Per cent Defective*
First Grade	85.0	81.3
Second Grade	86.8	84.5
Third Grade	83.2	83.3
Fourth Grade	71.6	74.7
Fifth Grade	63.8	60.2
Sixth Grade	63.8	61.7
Seventh Grade	68.2	60.2
Eighth Grade	77.1	75.0
Total	79.8	74.9

Of course, the immediately striking feature of this table is that nearly 80 per cent of the normal age children are found to have physical defects, while only about 75 per cent of the above normal age children are defective. This feature was an unlooked for result. The second noteworthy point is that the percentage of defective children in the lower grades is decidedly greater than in the upper grades.

The discovery of these conditions led to further study of the figures. The data were retabulated by ages and the results showed a very marked and consistent falling off in the per cent of children having each sort of defect, from the age of six up to the age of fifteen. Defective vision alone increases slowly but steadily, with advancing age. The contrast between the per cent having each of the six commoner defects at the age of six, and the per cent at fifteen is shown in the following table:

TABLE 66.—PER CENT HAVING EACH DEFECT, AT AGES SIX AND FIFTEEN.

Defect	*At 6 years*	*At 15 years*
Enlarged glands	40	7
Defective breathing	21	9
Defective vision	17	26
Defective teeth	65	31
Enlarged tonsils	40	14
Adenoids	23	3

In all these cases attention must be called to the fact that the decrease in the percentage of defective children is not due to the dropping out or leaving school of children suffering from these defects. This might be put forward as an explanation if we had to do with children above the age of compulsory attendance, or if the characteristic decrease did not take place until the age of fourteen or fifteen; but such is not the case. We have to do with children of from six to fifteen years of age, and the marked decrease begins with the eight, nine and ten year old children and continues steadily. As the older children in general are found in the upper grades and the younger children in the lower grades, it is not surprising that we found a larger percentage of defective children in the low grades than in the high grades. The important fact is that defects decrease with age.

Between boys and girls little difference in average of defects was discovered. An average of 1.8 defects was found among the boys, and 1.6 among the girls. Tabulating the results by kinds of defects, however, decided differences were discovered. The boys suffer much more from enlarged glands, defective breathing, and enlarged tonsils. The girls have much poorer vision and teeth.

The results that have been discussed, showing so consistently as they do that retarded or above normal age pupils have fewer defects than do those of normal age, furnish food for careful thought. Were further data not available, it would be difficult to explain the seeming anomaly; but the data showing the percentage of defectives by ages are illuminating. With the exception of vision, the percentage of pupils found to be suffering from each separate sort of defect decreases rapidly as age increases. The evidence is plain that age is the important factor.

The importance of this on all investigations into the influence of physical defects on school progress is at once evident. Whether the term "retarded" is used to express a condition or an explanation, it will always follow from the definition itself that retarded children will be older than their fellow pupils in the same grades. Therefore, in all cases it will be true that the "backward pupils" will be the older pupils.

Now, the older pupils are found to have fewer defects.

This is true whether they are behind their grades or well up in their studies. Therefore, it is not surprising that we find that 80 per cent of all children of normal age have physical defects more or less serious, while only 75 per cent of the retarded children are found to be defective. This does not mean that pupils with more physical defects are brighter mentally. It simply means that retarded children are older, and that older pupils, as has been shown, have fewer defects.

DEFECTS AND PROGRESS AMONG 3304 NEW YORK CHILDREN

But what is the significance of these results as regards school progress? We have found that the retarded children have fewer defects than those of normal age and that this is true for each separate sort of defect with the single exception of defective vision. We have also seen that the older children have fewer defects than the younger ones except in the case of defective vision. On the basis of these data we can draw no conclusions whatever concerning school progress and physical defects even in the case of eyesight.

But it is well known that in our schools there is no exact correspondence between grades and ages. Children of twelve years of age for instance are found in all the grades from the first to the eighth. A child of twelve in the eighth grade is unusually bright, one of the same age in the first grade is unusually dull. It is then of interest to us to discover whether the twelve year old child in the first grade will have more or fewer defects than the one in the eighth. In order to study this the records of all the children at the ages of ten, eleven, twelve, thirteen and fourteen examined in New York City were retabulated. These ages were taken because at all of them children are found scattered through the grades from the lowest to the highest.

There were 3304 of these children. Those ten years old numbered 910, the eleven year old ones 842, those of twelve years 664, those of thirteen years old 496, and of the fourteen year old pupils there were 392. The following table shows how they were distributed among the grades, and how many were suffering from each sort of defect:

TABLE 67.—PHYSICAL DEFECTS OF 3304 CHILDREN, AGES TEN TO FOURTEEN, IN NEW YORK CITY.

Grade	*Number Examined*	*Without Defects*	*Having Defects*	*Enlarged Glands*	*Defective Vision*	*Defective Breathing*	*Defective Teeth*	*Hypertrophied Tonsils*	*Adenoids*	*Other Defects*
1	33	6	27	12	4	6	17	11	5	7
2	263	40	223	103	64	65	139	81	68	56
3	608	96	512	127	142	90	334	148	82	96
4	892	260	632	99	233	90	364	195	108	140
5	619	236	383	52	157	40	198	104	41	36
6	453	164	289	18	110	58	141	59	17	42
7	299	87	212	13	84	35	77	43	17	36
8	137	30	107	11	39	5	45	18	5	14
Total	3304	919	2385	435	833	389	1315	659	343	427

A child of ten in the first grade is so badly retarded that we may fairly call him dull and we shall be wrong in only a very few cases of children who entered school very late indeed. We may feel even more sure that a child of eleven, twelve, thirteen or fourteen in the first grade is dull. A child of ten in the second, third or fourth grade is normal. In the fifth or sixth grade he is bright. By making appropriate changes in the grades similar statements can be made for the other ages.

Using this as a basis the records were retabulated, the pupils assigned among the three groups, and the results worked out in percentages:

TABLE 68.—PER CENT OF DULL, NORMAL AND BRIGHT PUPILS SUFFERING FROM EACH SORT OF DEFECT. AGES TEN TO FOURTEEN INCLUSIVE. ALL GRADES.

Defect	*Dull. Per cent*	*Normal. Per cent*	*Bright. Per cent*
Enlarged glands	20	13	6
Defective vision	24	25	29
Defective breathing	15	11	9
Defective teeth	42	40	34
Hypertrophied tonsils	26	19	12
Adenoids	15	10	6
Other defects	21	11	11
Number examined	407	2588	309
Defects per child	1.65	1.30	1.07
Per cent not defective	25	27	32
Per cent defective	75	73	68

Here the results are very different from those discussed so far. In every case, except in that of vision, the children rated as "dull" are found to be suffering from physical defects to greater degree than the "normal" or "bright" children. It is true that 75 per cent of the dull children are defective as compared with 73 per cent among the normal and 68 per cent among the bright children. These differences are very slight. But the defective dull child has on the average 1.65 defects as against 1.07 for the bright one. In other words the number of defectives among the

dull children does not differ widely from the number among the bright ones, but the dull child is found to be much more defective in degree.

That hypertrophied tonsils and adenoids have a distinct bearing upon retardation seems to be clearly indicated by the fact that the former are found in 26 per cent of the dull children and only 12 per cent of the bright ones, and in the case of the latter the percentage falls from 15 to 6. A similar condition is found in the cases of enlarged glands, defective breathing and defective teeth. In each the falling off is sharp and consistent as we move from the dull to the normal and bright groups. It is too consistent to be dismissed as accidental or non-significant.

The case of defective vision, however, is far from being so clear. Found in 24 per cent of the dull pupils, 25 per cent of the normal ones and 29 per cent of the bright ones, it is difficult to account for it. We have already seen that defective vision increases with advancing age. A computation of the individual ages of the dull and bright pupils in the groups here studied shows that the dull ones are older than the bright ones. Nevertheless they have better eyesight. The explanation may be that we are here dealing with extreme cases. The pupils we designate as bright are very young indeed for their grades and in all probability include a number who have injured their eyes through undue use and strain. Even a small percentage of such cases would account for the difference observed.

The computations establish in a convincing manner the close connection between certain physical defects and school progress, but they do not tell us just how great the retarding influence is or what part the different sorts of defects contribute to it. To throw light on these problems computations were made showing the average number of grades completed by the ten year old pupils who were found to be free from physical defects, the grades completed by those suffering from enlarged glands and so on for each of the other kinds of defects. Similar computations were made for the eleven, twelve, thirteen and fourteen year old children. Finally, the central tendency for the entire group was ascertained. The results are illuminating.

TABLE 69.—AVERAGE NUMBER OF GRADES COMPLETED BY PUPILS HAVING NO PHYSICAL DEFECTS COMPARED WITH NUMBER COMPLETED BY THOSE SUFFERING FROM DIFFERENT DEFECTS. CENTRAL TENDENCY AMONG 3304 CHILDREN, AGES TEN TO FOURTEEN YEARS, IN GRADES 1 TO 8.

Defect	*Average Number of Grades Completed*	*Defect*	*Average Number of Grades Completed*
No physical defects	4.94	Defective teeth	4.65
Enlarged glands	4.20	Hypertrophied tonsils	4.50
Defective vision	4.94	Adenoids	4.24
Defective breathing	4.58	Other defects	4.52

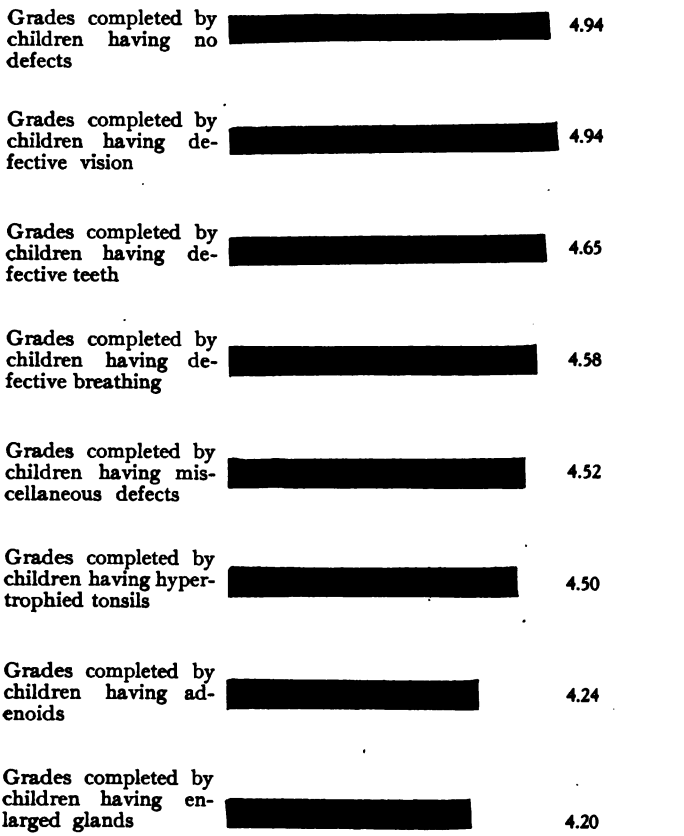

Diagram XXVII.—Average number of grades completed by pupils having no physical defects compared with number completed by those suffering from different sorts of defects.

The notable feature of both the table and the diagram is the fact that in every case except that of defective vision the children suffering from each sort of physical defect made less progress in their school work than did those not so handicapped. The seriousness of these handicaps in terms of percentages is shown below:

TABLE 70.—SHOWING PER CENT OF LOSS IN PROGRESS OF CHILDREN SUFFERING FROM EACH SORT OF PHYSICAL DEFECT.

Kinds of Defects	*Per cent of Loss in Progress*
Enlarged glands	14.9
Defective vision	none
Defective breathing	7.2
Defective teeth	5.9
Hypertrophied tonsils	8.9
Adenoids	14.1
Other defects	8.5
Average	8.8

In this table the average loss of 8.8 per cent which appears in the last line is not, of course, the numerical average of the per cents of loss corresponding to the different sorts of defects, but rather the general loss of progress discovered among all the children having physical defects. In other words, the children suffering from physical defects made on the whole 8.8 per cent less progress than did those having no physical defects.

CONCLUSIONS

What then shall we conclude in regard to the relation between physical defects and school progress in the light of the different investigations which have been discussed? We have seen that in the two Philadelphia examinations the percentages of defectiveness among "exempt" and "non-exempt" children are very similar. The Camden investigation showed very little difference as regards vision and hearing between retarded children and those of normal age.

The New York examination shows that the retarded children have on the whole fewer defects than those of normal age, but it goes farther than this. It establishes the important principle that except in the cases of vision older children have fewer defects, and it shows that when children who are badly retarded are compared with normal children and very bright children in

the same age groups so that the diminishing of defects through advancing age does not enter as a factor, the children rated as "dull" are found to have higher percentages of each sort of defect than the normal and bright children. Here again defective vision must be excepted.

Moreover, the New York investigation gives us quantitative measures of the retarding forces of the different kinds of defects. In general, children suffering from physical defects are found to make 8.8 per cent less progress than do children having no physical defects. Children suffering from enlarged glands and adenoids are retarded most. Hypertrophied tonsils, defective breathing and defective teeth are in general somewhat less serious in their effects. No statistical correlation is shown between slow progress and defective vision.

It must be remembered that these results are from a few schools in one city and are not presented as representing general or typical conditions. Moreover the same child is often suffering from several sorts of defects so that the figures do not really show the retarding influence of each sort of defect separately. For instance, we find that children suffering from enlarged glands are retarded to about the same degree as are those with adenoids. But these are to a great extent the same children. Most of those having adenoids also have enlarged glands. Thus the figures while having distinct value as revealing general tendencies must not be interpreted as showing with precision the relative retarding force of each separate sort of defect.

All of these considerations are of the first importance in the problem of retardation. That there is a distinct correlation between physical defectiveness and school progress has been shown. The quantitative measure of the retarding force shows that it is only one of the factors contributing to bring about the serious degree of retardation which exists in our public schools.

In studying the problems of school progress and physical defects we must not forget that school success is to only a limited extent a true measure of real ability. It may often be but an indication of adaptability and docility. Indeed it would not be surprising to find that the child of perfect physical soundness and exuberant health had so many outside interests as to render him

not particularly successful in school work, and that he found the rigid discipline of the school room so irksome as to cause him to fail of approbation by his teachers.

If investigations prior to the one conducted last year in New York have failed to establish the relation between physical defects and progress, the explanation may well be that the investigators have not tabulated their figures by ages and so their results have been vitiated by the factor of the decrease of defects with advancing age. Again, many of the investigations so far conducted have discriminated only slightly, if at all, between the different sorts of physical defects.

They have grouped together all kinds from pediculosis to tuberculosis. Some have a direct bearing on the problem; some none at all. Defective hearing undoubtedly exercises an important influence on a pupil's success in school, but the fact that a child has a club-foot has no such significance. When we find that "non-exempt" children in Philadelphia have many more physical defects than "exempt" children, and when upon further investigation we find that the difference is caused by the more prevalent skin diseases in the former group, we have not established a quantitative relation between pediculosis and progress. We have merely secured one more illustration of the shortcomings of the statistics of medical inspection. The new school hygiene is in many respects a new science, and like most ambitious young sciences it too often tries to prove too much.

When medical inspection shows that a reasonable per cent of all the school children are suffering from such physical defects as might reasonably be thought to have some bearing on school progress, it is not surprising that the study of the school records of these pupils shows a high degree of correlation to exist between their marked physical defects and their school progress. But when all defects, however slight, are lumped together and we are told that 80 per cent of the children are defective, it is not strange that no such correlation can be shown. In so relatively definite a test as that for vision we find the ratio of abnormality ranging from 7 per cent in Bayonne to 70 per cent in Cleveland. Again, in a recent examination in Sioux City it was reported that 80 per cent of the children were defective while about the same time

18 per cent were reported from Minneapolis. In Chicopee, Massachusetts, out of 500 children examined only one was reported as having perfect teeth—and he had spinal trouble.

Where the personal equation is so important and methods and standards so little established as in the field of medical inspection, the greatest caution must be exercised in drawing sweeping conclusions from the figures furnished. We have shown:

1. That physical defects decrease with age; that age is the important factor and must be taken into consideration in all investigations dealing with defectiveness and school progress.

2. It has been shown that vision does not follow the same rules as do the other defects.

3. The examinations conducted in New York have shown higher percentages of enlarged glands, defective breathing, hypertrophied tonsils and adenoids among the dull children than among the bright children.

4. It has been demonstrated that physical defectiveness has a distinct and important bearing on the progress of children.

The new hygiene has before it a great field in which it is destined to splendid accomplishments in conserving the physical soundness of the rising generations. Medical inspection through its detection and exclusion of contagious diseases is preventing much misery and saving many lives. The school doctor in his study of the physical welfare of the children will make easier, happier and more successful the lives of many thousands of pupils. But when this has been said the limited possibilities in this field have to some extent been indicated. The long yearned-for royal road to learning is not always to be found through the surgeon's knife. "It has not been demonstrated that if you cut out a child's tonsils, fit him with a pair of eyeglasses and clear him of adenoids the school term will be cut in half, the general level of education will surge up and the city will save millions of dollars." The old-fashioned virtues of industry, application, intelligence and regularity still hold sway, and among the reasons for poor scholarship are still to be found such old standbys as age upon starting, absence, laziness and stupidity.

CHAPTER XII

IRREGULAR ATTENDANCE AS A CONTRIBUTORY CAUSE OF RETARDATION

IN the present discussion of backwardness or retardation among school children, it has been thoroughly demonstrated that from one-quarter to one-half of all of the children in the schools are below the proper grades for their ages or have made less progress than they should in the time they have attended school. Whether classified by the criterion of age or by that of time in school a large part of all of our school children are retarded.

It has also been thoroughly demonstrated that an immediate result of this condition is that many children, upon reaching the age of fourteen or fifteen years, find themselves in the fifth or sixth grade instead of the eighth, and drop out without finishing. Thus it happens that a comparatively small proportion of the children entering our schools stay to complete the elementary school course. The result is that the amount of education received by the majority of all of our young people is painfully small, and the educational aims of our school system are, in a large measure, defeated.

Studies of the phenomena of retardation and elimination have up to the present time been mostly confined to attempts at quantitative measurement. Most of the attempts that have been made to point out causes have been somewhat speculative in nature. Among the causes assigned late starting, ignorance of the English language, innate dullness, and physical handicaps have been particularly emphasized. Less frequently, irregular attendance has been mentioned as a contributory factor. It is the purpose of this chapter to present data showing that irregular attendance is a large, if not the largest, factor in bringing about retardation.

The principles underlying the commonly used measurements for enumerating the children reached by a school system are comparatively simple. The common measures are three, namely; total enrollment, average enrollment, and average attendance.

Total enrollment as commonly interpreted is a statement of the total number of children who have been in school during the year for any length of time, long or short.

Average enrollment is often stated by months. It is an expression of the number of children on the roll, based on the supposition that all remained during the entire period. It is, of course, always smaller than the total enrollment.

Average attendance is computed substantially as is average enrollment. It is computation of the number present, based on the supposition that all were present during the entire time. It is, of course, always smaller than average enrollment.

These three measures of attendance have come into so nearly universal use that they are generally accepted without question. A school or a system that reports 90 or 95 per cent attendance is thought to have made a fine record, and the figure naturally leads the school authorities to feel that substantially every child was present and receiving the benefits of instruction every day.

How far this is from being the case is shown by comparing the average attendance with the total enrollment in some of our cities. According to the latest available figures, the relation between them in six of our largest systems is as follows:

TABLE 71.—COMPARISON OF ENROLLMENT AND ATTENDANCE IN SIX CITIES.

City	*Total Enrollment*	*Average Attendance*
New York	1000	751
Philadelphia	1000	695
Chicago	1000	823
Baltimore	1000	662
St. Louis	1000	813
Kansas City	1000	733

It is plain that total enrollment, the figure almost always used in stating the magnitude of our public school systems, while appealing effectively to civic pride because of generous size, does

not in reality give any accurate idea of how many children are present and receiving instruction each day.

In nearly all systems provision is made for temporarily dropping from the roll the name of any pupil absent more than a few days. In some places the period of absence allowed before dropping the name is three days, in others five, and in still others, ten. Thus the enrollment is automatically kept just a little ahead of attendance and a high per cent of attendance is assured. The fluctuations of attendance below 100 per cent really indicate nothing more than that absences of a day or two have been more or less frequent as the case may be.

It is obvious that such a system does not answer a question as to persistence of attendance. It does not tell us how many children have been present the entire year, and how many only a fraction of a year. It tells nothing about the attendance of an individual; whether he has been present most of the time or not. And yet if a child has been in attendance only half of the time it would plainly be vain to hope that he could be regularly promoted and go on with his classmates. The fluctuations from day to day in a given school are in reality little more than indicators of the clemency of the weather and the attractiveness of outside diversions. When the weather is stormy, or the circus is in town the attendance falls; when the sun shines and the circus leaves, the attendance rises. The figures tell us nothing at all as to which pupils and how many are always in school and the number of those frequently absent.

It is probable that few school men realize how many of the children in their schools are present only a small fraction of the year. According to the last United States Census, 13,385,628 attended school during the year 1900. Of these only 9,814,040 attended as much as six months. This indicates that the question of duration of attendance is well worth looking into.

A diligent study of school reports brings to light nine which give figures showing the persistence of attendance of the pupils. These reports are from Columbus, Ohio, 1907; Cleveland, Ohio, 1906; Dayton, Ohio, 1907; Grand Rapids, Michigan, 1907; Kansas City, Missouri, 1907; New Orleans, Louisiana, 1907;

Springfield, Ohio, 1907; St. Louis, Missouri, 1907; Syracuse, New York, 1907; also Porto Rico, 1907.

The figures they give are not all computed on the same basis. Cleveland and Porto Rico give figures showing the duration of enrollment, not attendance. It is impossible to discover from the report the basis on which the Columbus figures are computed. The seven other cities give figures showing the duration of attendance of all the children enrolled during the year. The figures showing attendance in the white district schools of St. Louis are as follows:

TABLE 72.—CHARACTER OF ATTENDANCE IN ST. LOUIS IN 1907.

Days	*Pupils*
200	3,367
180 to 200	32,672
160 to 180	11,935
140 to 160	5,776
120 to 140	3,681
100 to 120	3,188
80 to 100	3,321
60 to 80	2,656
40 to 60	3,009
20 to 40	3,282
Less than 20	2,844
Total	75,731

It is plain that the pupils who attended 200 days were never absent, that those who fell within the 180 to 200 days group were in continual attendance with merely casual absences of a day or two, and that most, if not all, of the rest were absent for considerable periods, or else began late in the year or left early.

TABLE 73.—ATTENDANCE IN ST. LOUIS, 1907. RELATIVE FIGURES.

Days	*Pupils*
200	44
180 to 200	431
160 to 180	158
140 to 160	76
120 to 140	49
100 to 120	42
80 to 100	44
60 to 80	35
40 to 60	40
20 to 40	43
Less than 20	38
Total	1000

In order to compare the conditions in the different localities some common basis must be established. The easiest way to do this is to reduce the data to relative figures on the basis of conditions among 1000 children. When the St. Louis figures are so reduced they appear as expressed in Table 73.

Now it will certainly be conceded that pupils can hardly hope to be promoted unless they have been in attendance during at least three-fourths of the school year. It is desirable then to so arrange our figures that we can measure attendance by fourths of the year. With attendance stated by groups of 20 days in a school year of 200 days this is impossible, but if we rearrange the table dividing each group in two so as to state attendance by groups of 10 days, instead of 20, we can divide the table into four groups. When this is done and each group divided in two we have a new table giving the same information in new form:

TABLE 74.—ATTENDANCE IN ST. LOUIS IN 1907 BY FOURTHS OF THE SCHOOL YEAR.

Days	*Pupils*	*Total*	*Per cent*
200	44		
190 to 200	216		
180 to 190	215		
170 to 180	79		
160 to 170	79		
150 to 160	38	671	67.1
140 to 150	38		
130 to 140	25		
120 to 130	24		
110 to 120	21		
100 to 110	21	129	12.9
90 to 100	22		
80 to 90	22		
70 to 80	18		
60 to 70	17		
50 to 60	20	99	9.9
40 to 50	20		
30 to 40	22		
20 to 30	21		
10 to 20	19		
0 to 10	19	101	10.1
Total	1000		

The dotted lines divide the year into fourths leaving in the first division those who have attended more than three-fourths of the time, in the second those who have been present from one-half to three-fourths of the year and so on.

In the following diagram the shaded portion represents absences and the white attendances:

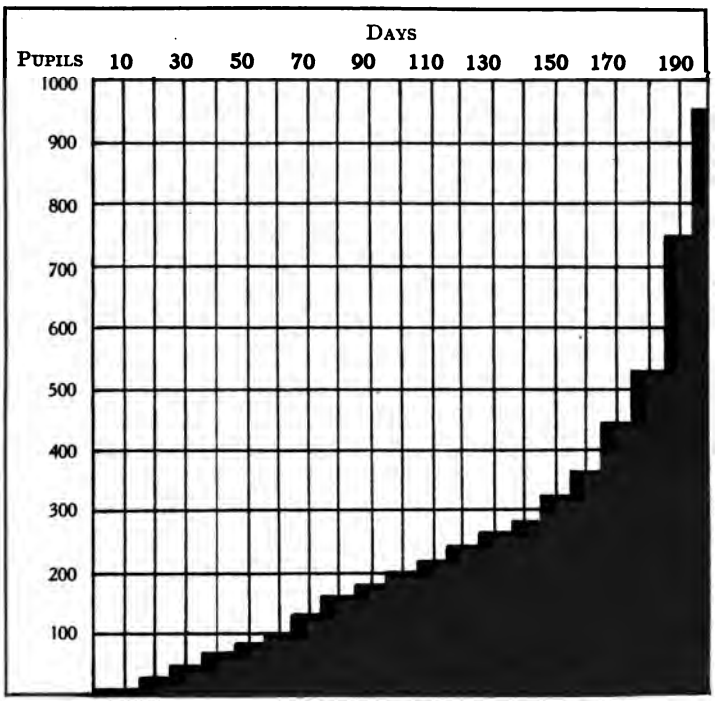

Diagram XXVIII.—Attendance in St. Louis in 1907. Shaded portion represents absences, white attendances.

This explanation has been given to make clear the methods by which the figures from all the localities have been treated. The final results are shown in Table 75.

The figures for Porto Rico and Cleveland are based on length of enrollment and each would occupy a lower position in the table if the figures gave the attendance instead. The basis of the

Columbus figures is uncertain. The figures for St. Louis and New Orleans are for white elementary schools only.

TABLE 75.—PERSISTENCE OF ATTENDANCE OF PUPILS IN DIFFERENT CITIES AND IN PORTO RICO.

City	*Less than One-fourth*	*Less than One-half*	*Less than Three-fourths*	*More than Three-fourths*
Porto Rico	2.0	9.2	21.6	78.4
Dayton, O.	4.7	12.1	23.6	76.4
Grand Rapids	6.7	14.8	27.5	72.5
Cleveland	8.6	18.3	28.0	72.0
Springfield, O.	6.5	13.7	28.2	71.8
Syracuse	6.2	16.0	29.7	70.3
St. Louis	10.1	20.0	32.9	67.1
Kansas City, Mo.	10.6	20.8	35.1	64.9
New Orleans	7.7	21.3	37.4	62.6
Columbus, O.	6.9	18.1	38.6	61.4
Average	7.0	16.4	30.3	69.7

The striking condition disclosed is that with the exception of Dayton, in no city do as many as three-fourths of the children attend as much as three-fourths of the school year. This is a radically different showing from that made by the figures published by some of these same cities giving the per cents of attendance ranging from 90 to 95. The published per cents do not disclose significant conditions. The figures giving attendance by periods of time do.

Only three of the cities publish figures which enable us to compare the number of children promoted with the number present at least three-quarters of the time. The results are as follows:

TABLE 76.—COMPARISON BETWEEN PERCENTAGES OF ATTENDANCE AND PROMOTION IN THREE CITIES.

City	*Per cent Present at Least ¾ of the Year*	*Per cent Promoted*
Springfield, O.	71.8	72.8
Syracuse	70.3	64.9
New Orleans	62.6	54.9

It seems obvious that we have not greatly erred in assuming that a low per cent of attendance was accompanied by a low per cent of promotions. The low percentages of promotion may surprise some since we are accustomed to read in reports of from 80 to 90 per cent of the pupils being promoted. The reason for the low figures in our table is that they are the result of comparing the pupils promoted with the whole number enrolled, not with those enrolled on the last day of the year, which is the common basis.

We may now consider the relation which such low percentages of promotion have to retardation and the evil which is its corollary—elimination. It is apparent that if considerable numbers of the children entering school fail to be advanced regularly, the lower grades will become abnormally swollen by the damming of the stream of pupils through them. Experience teaches us, too, that in the upper grades the pupils who have advanced slowly and so are over-age will drop out before completing the course, thus making these grades abnormally small.

The general rules which govern these phenomena have been fully treated in a previous chapter. The first is that the number of children in the lower grades before the dropping out process begins will vary as the inverse of the rate of progress. That is, if we have $\frac{4}{5}$ of the normal progress in these grades we shall have $\frac{5}{4}$ of the normal number of children in each grade. To state it still again in terms of school administration: If we have a steady rate of promotion of 80 per cent we shall find 1250 pupils in the first grade for each 1000 new pupils entering each year.

Another rule which is less exact and which varies in different localities, is that no matter what their progress we may expect about 10 per cent of the children to leave school upon reaching the age of thirteen, about 40 per cent will have left at fourteen years, and again about 50 per cent of these at fifteen years.

Where these conditions hold—and they do substantially as stated in many localities—if we assume a stationary population, no deaths, all the children entering school at the age of seven and a steady rate of promotion of 80 per cent, we shall have a grade distribution for every 1000 children entering school as follows:

TABLE 77.—HYPOTHETICAL GRADE DISTRIBUTION INFLUENCED BY RETARDATION AND ELIMINATION.

Grade	*Pupils*
First Grade	1250
Second Grade	1247
Third Grade	1238
Fourth Grade	1219
Fifth Grade	1127
Sixth Grade	905
Seventh Grade	570
Eighth Grade	272

The notable characteristics of this grade distribution are that for each 1000 children entering school we find 1250 in the first grade, and only 272 reaching the eighth. Just such conditions as these exist in many of our cities. Where they are better it is usually because many children enter before the age of seven, or because fewer drop out at the ages of thirteen, fourteen and fifteen. More rarely it is because the percentage of promotion is higher.

To summarize then we may state our conclusions in four propositions:

1. Such figures as are available indicate that in our cities less than three-fourths of the children continue in attendance as much as three-fourths of the year.

2. Irregular attendance is accompanied by a low percentage of promotions.

3. Low percentage of promotions is a potent factor in bringing about retardation.

4. Retardation results in elimination.

In the foregoing no discussion has been attempted of the fact that a part of the short term attendance is due to the immigration and emigration of families into and from different cities. Undoubtedly many children begin the school year in one city and continue it in another, thus contributing to swell the figures of short term attendance in both places. It is undoubtedly true, too, that the process usually results in halting the child's progress for a time and often in causing him to lose a grade.

CHAPTER XIII

PROMOTIONS

THE school child who is not promoted does not advance. The problem of regular advancement—of promotions—bears the very closest relation to the problems of retardation and elimination.

It is significant of the inadequacy of the study that has been devoted to the whole problem of the progress of school children through the grades, that it is with the greatest difficulty that information concerning promotions can be gleaned from the printed reports. Moreover, where information is to be found it is often in the shape of one figure giving the per cent of promotions for the whole school system for the year and very often we are not even told on what basis this percentage was computed.

Now it is rare indeed that the percentage of pupils promoted is even approximately constant throughout the grades. As a rule it is much lower in the first grade than in any other grade, and usually it increases with the upper grades. There are good reasons for these commonly observed characteristics. Children enter the first grade in many cities during all of the months of the school year. When they are old enough to begin school their parents send them and they are enrolled. This brings it about that at the end of the term or year a considerable number of them have been in attendance only a short time and are not prepared to go on to the next higher grade. This accounts for the lower percentage of promotions in the first grade.

In the upper grades attendance is more regular, classes are smaller and the duller pupils drop out with each advancing grade. These are some of the reasons accounting for the higher percentages of promotion in the upper grades.

The per cent of pupils promoted is usually computed on the

basis of the number enrolled on the last day of the term or year, but not always. It is natural that this basis should be taken, for we naturally compare accomplishment with possibility, and the child who is no longer on the roll could in no event be a candidate for promotion when the last day of the term is reached.

The objection against comparing the pupils promoted with those enrolled at the end of the term is that the pupils who stay to the end are invariably much fewer in number than the total number enrolled during the term, and so we often get a more favorable showing than the facts warrant.

A diligent study of school reports has brought to light promotion figures for sixteen cities. The facts are shown in percentages in the tables on the following page. In all of the cases except that of Chicago the number of children promoted is compared with the number enrolled at the end of the term. In Chicago average enrollment is the basis used.

The line of averages at the bottom of the table shows the characteristics already mentioned with regard to the percentages of promotions in lower and higher grades. The average percentage of promotion in the first grade is 73. This rises to 85 in the third and fourth, sinks to 83 in the fifth, goes back to 85 in the sixth and seventh, and rises to 88 in the eighth. This is shown even more clearly in Diagram XXIX.

The next significant feature revealed by a study of the table is that there is surprisingly little difference between the average promotion percentages in the elementary grades of the different cities. These figures are found in the final column. With the single exception of Wheeling all of the averages lie between 81 and 90.

Now while there are few quantitative standards by which city school systems can be compared, we know in a general way that we have in this list some cities that have school systems rated by common consent as very good. There are other cities which are recognized as having much poorer systems.

Again, "promotion" is simply a term of educational administration which is used to denote progress of pupils from grade to grade. We know that pupils progress at greatly varying rates in these cities, for many of the cities have considerably more re-

tarded pupils than do others. The question arises why it is that we find the promotion percentages so nearly uniform.

TABLE 78.—PROMOTIONS IN SIXTEEN CITIES. PERCENTAGES.

City	*Grade*										*Averages Elem. Grades*
	K	1	2	3	4	5	6	7	8	9	
Chicago, 1906	76	73	86	87	87	82	84	82	89	..	84
Cincinnati, 1907	..	71	81	81	81	85	86	86	89	..	83
Fort Wayne, Feb., 1907	..	71	89	87	85	82	88	85	84	..	84
Fort Wayne, June, 1907	..	68	86	86	85	83	88	84	88	..	84
Haverhill, 1907	..	85	91	91	92	91	88	92	93	96	90
Louisville, 1905	..	83	87	86	89	84	83	87	92	..	86
Malden, 1907	..	77	91	92	91	92	92	88	89	97	89
Medford, 1907	..	79	86	95	92	89	91	92	95	92	90
New York, Jan., 1907	37	70	81	81	82	79	80	81	83	..	81
New York, June, 1907	53	74	83	83	82	82	81	80	84	..	81
Philadelphia, 1908	..	78	81	82	83	79	83	84	84	..	82
Providence, 1908	..	86	93	88	89	83	81	79	88	..	86
Salt Lake City, 1907	..	78	82	85	82	84	87	86	93	84	84
Somerville, 1907	..	83	88	91	90	92	87	87	93	94	89
Springfield, O., 1907	..	81	84	82	84	86	83	89	97	..	86
Wheeling, 1907	..	45	64	72	69	57	75	77	..	..	66
Wilkes Barre, 1905	..	55	94	95	96	93	89	86	78	..	86
Williamsport, 1908	..	73	80	76	78	80	84	86	90	93	82
Averages, each grade	55	73	83	85	85	83	85	85	88	93	84

TABLE 78.—(*Continued.*) PROMOTIONS IN HIGH SCHOOLS OF FOUR OF THE ABOVE SIXTEEN CITIES.

City	*Year*			
	I	II	III	IV
Chicago, 1906	65	66	73	89
Cincinnati, 1907	79	79	88	100
Louisville, 1905	71	70	82	80
Springfield, O., 1907	85	79	84	91
Averages	75	73	81	90

One answer to this question may be reached by studying

briefly the great influence exerted by a slight difference in the percentage of promotion. We are not accustomed to consider such differences as significant when they are slight. In a general way we feel that if a school system has a record of promotions of 85 per cent it has done well, and that if another system has a record of 80 per cent it too has not only done well, but nearly as well as the first system.

It is worth while to investigate the validity of this assumption. In the diagram shown below we have the average percentages of promotion for the several grades. If 1000 pupils begin

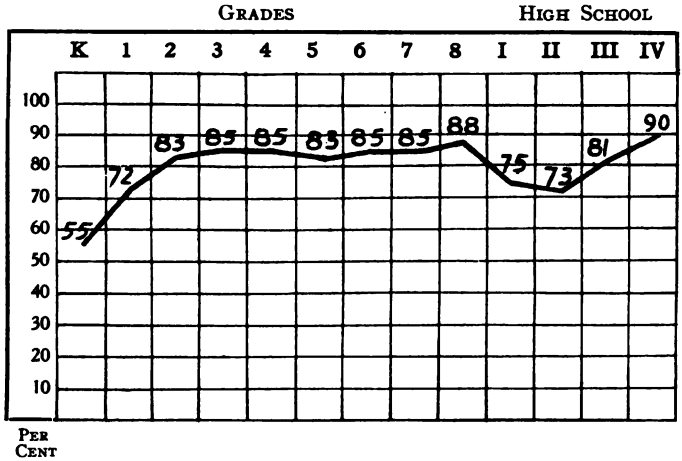

Diagram XXIX.—Average Promotion Rates from records of sixteen cities.

school together and are promoted or fail according to these average percentages, how many will complete eight years without failing; how many will fail; and what will be the aggregate number of failures? Moreover, how will they be distributed as to age and grade at the end of eight years if none drop out? The answers to these questions will show us the true significance of these promotion percentages in their practical working out. To obtain the information let us apply the conditions stated above to a supposititious case where 1000 pupils enter school each year.

By consulting the lowest line in Table 79 we note that in the eighth year only 260 of the fourteen year old pupils have reached

the eighth grade. At the age of fourteen pupils begin to fall out of school in large numbers. If we should continue our table so as to include the ages fifteen and sixteen and allow for the dropping out of thirteen, fourteen, fifteen and sixteen year old pupils our upper grades would be somewhat larger than they are in the table, and contain pupils of ages varying over an even greater range. In other words we should thereby more closely approximate conditions found in our school systems.

TABLE 79.—SHOWING AGE AND GRADE DISTRIBUTION IN THE EIGHTH YEAR IN A CITY WHERE 1000 CHILDREN ENTER SCHOOL EACH YEAR AND ARE PROMOTED ACCORDING TO THE PERCENTAGES SHOWN IN THE PRECEDING DIAGRAM. NONE DIE AND NONE DROP OUT.

Grade	*Age* 7	8	9	10	11	12	13	14	*Total*
First . .	1000	280	48	8	1	..	..	..	1337
Second . .	..	720	354	93	22	5	1	..	1195
Third . .	..	..	598	391	137	41	10	2	1179
Fourth . .	..	..	..	508	408	183	62	17	1178
Fifth . .	..	..	..	..	432	412	218	86	1148
Sixth . .	..	..	..	..	..	359	403	246	1008
Seventh .	..	..	..	..	..	..	306	389	695
Eighth . .	..	..	..	..	..	..	..	260	260
Total .	1000	1000	1000	1000	1000	1000	1000	1000	8000

In the table the 260 pupils in the eighth grade have reached that point without having failed. All of the other fourteen year old pupils have failed once or more. There are 740 of them. Of these the 389 pupils who are in the seventh grade have each failed of promotion once; those in the sixth grade have failed twice and so on. Computing these failures in this way for all of the fourteen year old pupils we get a total number of failures of 1217.

We may now express the results of applying our average promotion figures to our hypothetical case in a table as follows:

TABLE 80.—RESULTS OF AVERAGE PERCENTAGES OF PROMOTION.

Number not Failing	*Number Failing*	*Aggregate Number of Failures*
260	740	1217
10	145	

The facts are startling when we reflect that they express the results of average percentages of promotion. In general terms they mean that in our city schools on the average three out of every four pupils have failed at least once by the time the eighth year of school life is reached, and that the whole number of failures is so large as not to fall far short of averaging two for each pupil who has failed. Certainly the average city school system trains its pupils well in the habit of failure.

If these are the average results, what are the results in the systems having higher percentages of promotion? In the case just discussed the average percentage of promotion in all the grades was 83. In Haverhill and Medford it is 90. Proceeding just as before and applying the Haverhill percentages to the case of 1000 pupils who enter school together each year at the age of seven we have in the eighth year the following distribution:

TABLE 81.—SHOWING AGE AND GRADE DISTRIBUTION IN THE EIGHTH YEAR IN A SYSTEM WHERE 1000 CHILDREN ENTER EACH YEAR AND ARE PROMOTED ACCORDING TO THE HAVERHILL PERCENTAGES. NONE DIE AND NONE DROP OUT.

Grade	*Age*								*Total*
	7	8	9	10	11	12	13	14	
First	1000	150	13	1	..	..	..	..	1164
Second	..	850	213	31	3	..	..	..	1097
Third	..	..	774	263	50	7	1	..	1095
Fourth	..	..	..	705	298	73	14	1	1091
Fifth	..	..	..	..	649	329	104	21	1103
Sixth	..	..	..	..	..	591	360	125	1076
Seventh	..	..	..	..	..	..	521	373	894
Eighth	..	..	..	..	..	..	..	480	480
Total	1000	1000	1000	1000	1000	1000	1000	1000	8000

The results here are in sharp contrast to the results discussed above. The comparison is as follows:

TABLE 82.—EFFECTS OF AVERAGE PROMOTION RATES AS COMPARED WITH RATES OBTAINING IN HAVERHILL, MASS.

Percentages of Promotion	*Number not Failing*	*Number Failing*	*Aggregate Number of Failures*
Average, 83%	260	740	1217
Haverhill, 90%	480	520	690

On the Haverhill standard 480 pupils out of every 1000 reach the eighth grade without failing; on the average standard only 260 do so. On the average standard 740 pupils fail on the way from the first grade to the eighth; on the Haverhill standard only 520. In the former case the aggregate number of failures is 1217; in the latter only 690. The contrasts are sharp and yet the average of the percentages of promotion in the average case is 83, while in Haverhill it is 90. The difference is only 7 points, but the difference between the number of pupils with clear records is 220 in each 1000. This illustrates with great clearness the importance of even slight variation in promotion percentages. The principle is still further emphasized by noting the results of promotion percentages varying from 100 down to 75:

TABLE 83.—SHOWING FOR EACH 1000 PUPILS HOW MANY DO NOT FAIL AND HOW MANY FAIL IN EIGHT YEARS OF SCHOOL LIFE AND AGGREGATE NUMBER OF FAILURES UNDER DIFFERENT PROMOTION PERCENTAGES.

Percentages of Promotion	*Number not Failing*	*Number Failing*	*Aggregate Number of Failures*
100	1000	000	000
95	734	266	350
90	478	522	700
85	320	680	1050
80	210	790	1400
75	104	896	1750

These results are shown in graphic form in the following diagrams which forcibly illustrate the astonishing rapidity with which the

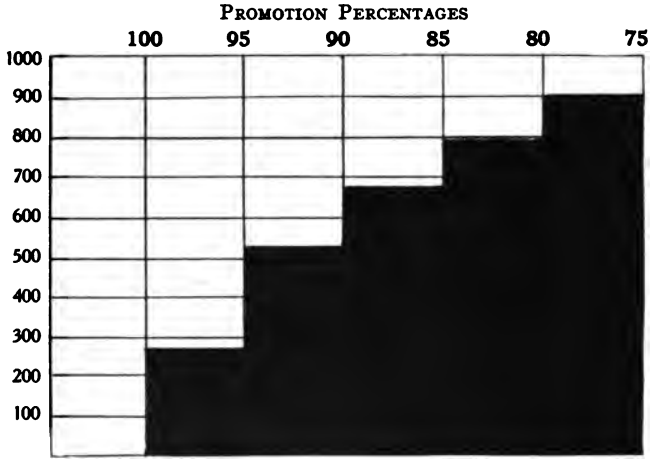

Diagram XXX.—Number failing and number not failing in eight grades in each 1000 pupils. In each upright column the black portion represents the number failing. Note the rapid increase with each successive drop in promotion percentage.

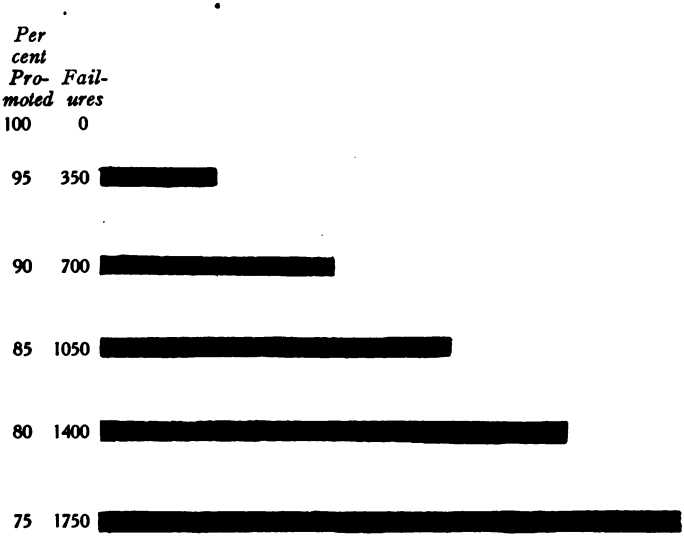

Diagram XXXI.—Increase in the number of failures in eight grades among 1000 pupils with each decrease in the per cent promoted.

bad effects of low percentages of promotion increase with each successive decrease of the percentage promoted.

Both figures and diagrams show in striking fashion how far from valid is the natural and common assumption that slight differences in rates of promotion are of little significance. The facts are quite to the contrary. A promotion rate of 75 per cent is an entirely different matter from one of 80 per cent, and this again has not at all the same educational significance as a 90 or 95 per cent rate.

CHAPTER XIV

THE FACTOR OF SEX

IT is a matter of common knowledge that there are more girls than boys in American high schools. According to the figures published by the Commissioner of Education in his report for 1907, the boys constitute but 43 per cent of the high school membership and the girls 57 per cent. The condition is noteworthy because the United States is the only nation having more girls than boys in her secondary schools. The common explanation, and the one put forward by the Commissioner in his report, is that boys have superior opportunities for securing work at a relatively early age and so drop out of school. Plausibility is lent to this view by the fact that not only do more girls than boys enter the high schools, but a greater proportion remain to the final year.

In 1907 the membership of the four classes in 7624 American high schools as published by the Commissioner of Education was as follows:

TABLE 84. — MEMBERSHIP OF 7624 AMERICAN HIGH SCHOOLS, 1906-7.

Class	*Boys*	*Girls*	*Total*
First Year	137,388	173,296	310,684
Second Year	85,082	114,684	199,766
Third Year	55,458	77,864	133,322
Fourth Year	36,156	53,726	89,882
Total	314,084	419,570	733,654

When these figures are reduced to proportional numbers on he basis of 100 girls in the first class, the falling off in the upper

classes, the preponderance of girls over boys, and the better retention among the girls in the upper grades are easily seen.

TABLE 85.—MEMBERSHIP OF 7624 AMERICAN HIGH SCHOOLS IN 1906-7. PROPORTIONAL NUMBERS.

Class	*Boys*	*Girls*	*Total*
First Year	79	100	179
Second Year	49	66	115
Third Year	32	45	77
Fourth Year	20	31	51
Total	180	242	422

Or, as shown by the diagram:

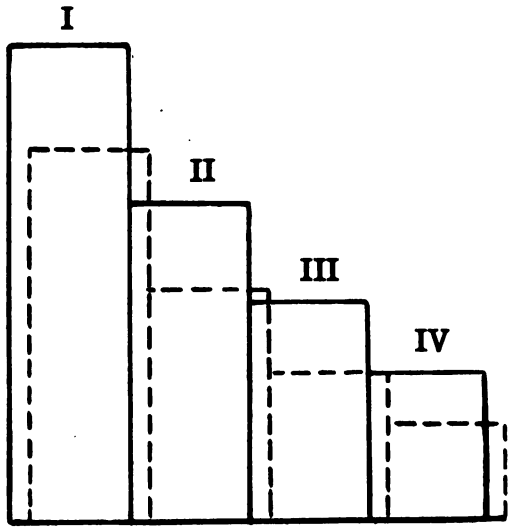

Diagram XXXII.—Showing the falling off of the number of boys and girls in the successive high school classes. Girls represented by columns in solid lines, boys by columns in broken lines.

Roughly speaking, for each 100 girls who enter the high school there are only 79 boys. Twenty-five per cent of the boys who enter continue to the fourth class as compared with 31 per cent for the girls. This situation in the field of secondary educa-

tion has been the subject of extended comment but similar comparisons for elementary schools have been rare. The reason has been that until recently we did not have grade figures from a sufficient number of school systems to allow of safe studies of grade variability between the two sexes. This difficulty has now been removed by the publication of grade figures by the United States Commissioner of Education.

According to his report for 1907 the two sexes were distributed among the grades in 752 towns and cities as follows:

TABLE 86.—GRADE DISTRIBUTION BY SEXES IN 752 CITIES. 1906-7.

Grade	*Boys*	*Girls*
First Grade	266,659	249,219
Second Grade	190,755	182,444
Third Grade	181,241	176,442
Fourth Grade	165,127	165,824
Fifth Grade	143,174	143,132
Sixth Grade	119,935	123,525
Seventh Grade	91,773	101,271
Eighth Grade	64,391	75,112

We have seen that in the first, as in the other high school classes, the girls outnumber the boys. In the elementary schools the boys are more numerous than the girls in the first grade, but in the eighth grade the girls are more numerous. If we reduce this table also to proportional numbers, taking as a basis this time 100 boys in the first grade, we shall see clearly the comparison between the two sexes.

TABLE 87.—GRADE DISTRIBUTION BY SEXES IN 752 CITIES. PROPORTIONAL NUMBERS.

Grade	*Boys*	*Girls*
First Grade	100	93
Second Grade	71	68
Third Grade	67	66
Fourth Grade	62	62
Fifth Grade	53	53
Sixth Grade	44	46
Seventh Grade	34	37
Eighth Grade	24	28

Here the comparison is very easily seen. There are more boys than girls in the first grade and more girls than boys in the eighth.

Now the sexes are substantially equal in number in the population. In the United States as a whole at the ages five to nineteen boys are only 1 per cent more numerous than girls. What then is the explanation of their decided preponderance in these lower grades? There is only one possible answer. Since the two sexes must enter school in substantially equal numbers but boys are decidedly more numerous in the lower grades, it means that there is considerably more retardation among boys than among girls. On the other hand girls are more numerous in the upper grades. This means that there is more elimination among boys. These conditions are shown in the following diagram which represents graphically the facts of the table showing the grade distribution of the sexes:

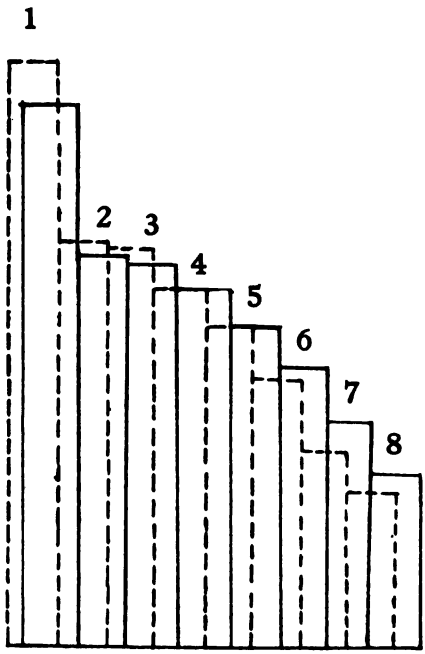

Diagram XXXIII.—Showing the relative distribution of boys and girls in the elementary grades. Boys represented by columns in dotted lines, girls by columns in solid lines. Boys are more numerous in the lower grades, girls in the upper ones.

The conclusions respecting the relative amounts of retardation and elimination among boys and girls may be easily tested by an appeal to the grade and age distribution in those cities which publish these figures separately for the two sexes. Careful search has brought to light fifteen such cases. The per cent of retarded pupils has in each case been calculated by the method explained in Chapter IV with the results shown in the following table:

TABLE 88.—PER CENT OF RETARDED PUPILS AMONG BOYS AND AMONG GIRLS IN FIFTEEN CITIES.

City	*Boys*	*Girls*	*Difference in Favor of the Girls*
1. Aurora, 1907	20.1	16.0	4.1
2. Baltimore, 1907	48.0	44.5	3.5
3. Boston, 1907	19.0	18.1	.9
4. Camden, 1907	47.9	44.8	3.1
5. Columbus, 1907	39.9	34.9	5.0
6. Decatur, 1908	33.4	26.5	6.9
7. Erie, 1901	61.0	59.2	1.8
8. Fort Wayne, 1907	26.7	20.4	6.3
9. Kansas City, Mo., 1908	49.3	47.8	1.5
10. Kingston, N. Y., 1908	41.5	35.2	6.3
11. Los Angeles, 1904	41.2	35.4	5.8
12. New Haven, 1908	25.7	25.2	.5
13. Reading, 1907	35.5	27.5	8.0
14. Trenton, 1904	34.6	27.1	7.5
15. Williamsport, Pa., 1908	32.8	29.4	3.4
Average of percentages	37.1	32.8	4.3

In every case there is more retardation among boys than among girls, the difference ranging from .5 per cent in New Haven to 8 per cent in Reading. Since the average percentage of retardation is 37.1 among boys and 32.8 among girls we may say, taking the percentage of retardation among girls as a basis, that retardation among boys is 13 per cent more prevalent than among girls.

The second proposition which was stated as a conclusion drawn from the study of the grade figures published by the Commissioner of Education, was that there was greater elimina-

tion among boys than among girls. To test this, recourse must be had to the grade and age figures of thirteen of the cities which publish their figures by sexes. The methods by which the per cent of beginning pupils continuing to the final grade is computed have been explained in the chapter on "Mortality and Survival in the Grades." Applying these methods of computation we have:

TABLE 89.—SHOWING PERCENTAGES OF BOYS AND GIRLS RETAINED TO THE FINAL ELEMENTARY GRADE IN THIRTEEN CITIES.

City	*Per Cent of Boys Retained to Final Grade*	*Per cent of Girls Retained to Final Grade*
1. Aurora, 1907	78.9	79.8
2. Baltimore, 1907	26.6	31.9
3. Boston, 1907	63.1	72.3
4. Camden, 1907	16.6	18.0
5. Columbus, 1907	51.6	58.8
6. Decatur, 1908	77.0	78.7
7. Erie, 1901	20.7	34.0
8. Fort Wayne, 1907	79.4	75.4
9. Kansas City, Mo., 1908	55.5	72.3
10. Kingston, N. Y., 1908	63.8	84.1
11. Los Angeles, 1904	41.7	57.7
12. Trenton, 1904	33.5	42.5
13. Williamsport, 1908	40.9	54.6
Average of percentages	49.9	58.5

Here in every case, except that of Fort Wayne, a greater percentage of girls than of boys is retained to the final elementary grade. The percentage for boys is 49.9; for girls it is 58.5. The difference in favor of the girls is 8.6 points. Taking the percentage of retention among boys as a basis we may say that the proportion of girls who remain in school to the final elementary grade is 17.2 per cent greater than that for the boys.

Since retardation and elimination are both more severe among boys than among girls it follows that the number of repeaters must also be greater. Computing in each case the number of repeaters by the method described in the chapter entitled "The Money Cost of the Repeater" we have the following results:

TABLE 90.—NUMBER OF REPEATERS AMONG BOYS AND GIRLS IN FOURTEEN CITIES.

City	*Boys*	*Girls*
1. Aurora, 1907	156	155
2. Baltimore, 1907	9,023	8,432
3. Boston, 1906	5,991	5,030
4. Camden, 1907	2,132	2,131
5. Columbus, 1907	2,020	1,513
6. Decatur, 1908	440	354
7. Erie, 1901	1,065	961
8. Fort Wayne, 1907	500	443
9. Kansas City, Mo., 1908	4,247	3,814
10. Kingston, N. Y., 1908	407	303
11. Los Angeles, 1904	3,103	2,425
12. New Haven, 1908	1,772	1,600
13. Trenton, 1904	1,083	1,005
14. Williamsport, 1908	373	321
Total	32,312	28,487
Total membership of elementary schools	141,240	140,839
Per cent of repeaters	22.8	20.2

In every case there is more repeaters among the boys, more among the girls. The percentages are 22.8 for the former and 20.2 for the latter. Taking the proportion of repeaters among the girls as a basis we find that the proportion for boys exceeds that for girls by 12.8 per cent.

Since it has been shown that there is more retardation, more elimination and a greater number of repeaters among boys than among girls it follows that rates of promotion must be lower among them. Unfortunately it is impossible to test this satisfactorily because of lack of information in a sufficient number of cases. Only two cities have been found in which the statistics of promotion are so published as to permit of the comparison. There the results are as follows:

TABLE 91.—PER CENT OF PROMOTION AMONG BOYS AND GIRLS IN TWO CITIES.

City	*Boys*	*Girls*
Wilkes Barre, 1905	80.9	81.2
Wheeling, 1907	71.0	73.0

While it would be distinctly unwise to draw conclusions from two cases, it is significant that here, as in all of the other comparisons made, the result is the same—conditions favor girls over boys. The conclusions from the comparisons between conditions for the two sexes may be summarized as follows:

1. In our high schools 57 per cent of the pupils are girls and only 43 per cent are boys.
2. For each 100 girls who enter there are only 79 boys.
3. Twenty-five per cent of the boys continue to the fourth class as compared with 31 per cent for the girls.
4. Retardation among boys in elementary schools is 13 per cent more prevalent than among girls.
5. The proportion of girls who remain to the final elementary grade is 17 per cent greater than the proportion of boys who remain.
6. There are more repeaters among boys than among girls. The former exceed the latter by about 13 per cent.

All of the results which have been discussed are most significant from an educational view point. In the current discussion of what has been termed the feminization of our schools much has been made of alleged bad effects of too exclusively feminine instruction on the moral fiber and character of the boys, but little evidence has been brought forward to substantiate these claims.

Here we have indisputable evidence that there is more retardation among our boys than among our girls in the elementary schools. As this condition exists before the close of the compulsory attendance period it can have no relation to the alleged greater desire for seeking employment on the part of the boys which has often been put forward as an explanation of the more rapid falling out of school of the boys. There are more repeaters among the boys than among the girls and the boys leave school earlier and in greater numbers. This latter condition arises in the elementary schools and continues through the high schools. The percentage of promotions is less among boys than among girls.

It is impossible definitely to attribute these conditions to

the employment of large numbers of women teachers in our schools because we have no schools taught by men to use for purposes of comparison. We can, however, state definitely as a conclusion from the facts that have been presented, that our schools as they now exist are better fitted to the needs and natures of the girl than of the boy pupils.

CHAPTER XV

AGE THE CONTROLLING FACTOR IN ELIMINATION

WHEN we study city school systems with reference to the proportion of their pupils that they retain to the final elementary grade we find, as shown by this study, the greatest diversity of results. Camden drops four out of every five on the way from the first grade to the eighth. Quincy, Massachusetts, drops one and keeps four out of every five. Careful study of the age and grade figures shows conclusively that age is the deciding factor in this dropping out process. Children are not kept in the elementary school as a rule long after they pass the age of fourteen. If upon reaching that age they are ready to pass on to the high school many of them will do so. If on the other hand they are only in the fifth grade they will drop out and go to work. In any case they will leave the elementary school at about that age.

This may be verified by a study of the age and grade distribution in any city. For the present discussion, let us consider conditions in Cincinnati in June, 1907. The distribution of children by grades and ages at that time is given in the following table:

TABLE 92.—GRADE AND AGE DISTRIBUTION IN CINCINNATI.

Grade	*Age*													*Total*
	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	988	3557	1972	790	312	149	82	40	13	8	3	..	..	7914
2	20	418	1990	1870	988	467	235	106	54	18	1	..	..	6167
3	..	9	381	1608	1726	1201	623	323	162	32	9	2	1	6077
4	..	..	60	401	1403	1503	1038	622	306	72	15	1	..	5421
5	..	..	..	15	288	1112	1233	1041	592	167	32	1	1	4482
6	..	..	..	..	27	310	943	1209	820	298	49	4	1	3661
7	..	..	..	..	..	35	273	885	900	462	117	18	5	2695
8	..	..	..	..	..	..	24	257	771	556	210	40	5	1863
Total .	1008	3984	4403	4684	4744	4777	4451	4483	3618	1613	436	66	13	38280

Referring to the figures in the top row we find that there are 1397 pupils nine years of age or older. As these statistics were gathered at the end of the year we may consider that these first grade children if they progress normally may graduate seven years from now. But they now range in ages from 9 to 16. Hence, they will be from 16 to 23 years of age upon graduation.

What is the probability that they will remain in school until they attain these ages? An exact computation of this cannot be made because we have no means of finding out how many new pupils enter the schools of Cincinnati each year. However, we may approximate it by the method explained in Chapter V. We note that the number of children at each of the ages from eight to thirteen inclusive is not far from 4500. As the number of beginners each year cannot be far from the number of children who become of school age each year, we shall not be far out of the way if we conclude that the number of pupils annually entering the schools of Cincinnati for the first time is about 4500. Now the number of children sixteen years of age or older in the eighth grade is only 255. That is to say, out of the children who enter these schools each year only one out of eighteen stays to graduate, if in order to do so he has to remain until he is at least sixteen years old. If graduation means staying in school until the age of seventeen, only one in 100 does so; the rest drop out. If graduation means staying to the age of eighteen only one in 900 survives. The rest fall by the wayside.

By referring to the figures at the bottom of the table giving size of the age groups, it will be noted that there is a sharp falling off at the age of fourteen followed by successive and large diminutions at the ages fifteen, sixteen, seventeen and eighteen. Of course, part of this is due to the fact that many of the children of these ages have passed on into the high school. A large part of it, however, is due to the permanent dropping out of school of children at the ages from fourteen on. In Cincinnati practically no children leave school before the age of thirteen. One out of every five drops out at the age of fourteen. During the following year half of the children leave. At sixteen half of those who are left drop out. At seventeen there is a further falling off of 50 per cent. The same is true at eighteen and nineteen.

It is evident that the age of fourteen is the critical age in Cincinnati. The age of fourteen is not to be taken, however, as the universal quitting point. Cities differ very much in the magnetic powers of their schools over the children. In some cities, Wheeling for example, pupils leave in large numbers at the age of thirteen. In others, as in Grand Rapids, few drop out of the elementary schools before the age of fifteen.

There is an even greater difference to be noted in the age of starting. In Cincinnati few children are found under the age of seven. In Boston a large part of the children begin school at the age of five. If a child begins school at the age of five and is regularly promoted he can complete the eight grades by the time he is thirteen; if he begins at seven he will reach the final grade at fifteen. Since both combinations are possible and common, the only way to discover whether age at starting or retention in the upper grades is the deciding factor in securing for a city a high percentage of grade survival, is to study the facts.

In order to do this Table 93 has been prepared which includes only cities which give age figures for all schools, not for elementary schools only. Cities have also been omitted where the number of children at six years of age appears to mean children of six and under. This leaves us thirty-seven cities to consider. These cities are ranked in the order of the percentage of beginning pupils continuing to the highest grade. Decatur, where 77.4 per cent of the beginners survive occupies the first place, and Camden which carries through only 17.3 per cent occupies the other extreme.

In this list Richmond (colored) occupies the median position. Nineteen cities make better showings and nineteen make poorer records. This is shown by the plus and minus signs in the second column. The third column shows in relative figures, on the basis of 1000 beginners, the number of pupils who are in school at the age of six.

It will be noted that in several cases the number is more than 1000. At first sight this appears anomalous, for we should not expect the number of children at the age of six to exceed the number of beginners. The reason is that the number of beginners is computed by taking the average of the year groups. In the cases in the table where the children at six are more than 1000, it is

because the six year group happened to be larger than the average of the components going to make up the figure which we considered the number of beginners.

TABLE 93.—PER CENT OF PUPILS RETAINED TO FINAL GRADE, NUMBER AT 6 YEARS OF AGE AND NUMBER AT 15 YEARS IN 37 CITIES. RELATIVE FIGURES ON THE BASIS OF 1000 BEGINNERS.

City	*Number Reaching Highest Grade*	*Relation to Median*	*Number at 6 Years*	*Relation to Median*	*Number at 15 Years*	*Relation to Median*
1. Decatur	77.4	+	974	+	451	+
2. Fort Wayne	77.0	+	1170	+	506	+
3. Grand Rapids	76.4	+	1017	+	818	+
4. Omaha	74.3	+	1024	+	554	+
5. Medford	72.2	+	930	—	488	+
6. Richmond (white)	71.9	+	103	—	449	+
7. Wilmington (white)	69.8	+	560	+	595	+
8. Newton	68.9	+	1026	+	—	+
9. Denver	68.8	+	1166	+	641	+
10. Kansas City	67.4	+	1116	+	560	+
11. Springfield, O.	59.4	+	786	—	525	+
12. Fitchburg	58.2	+	1015	+	555	+
13. New Brunswick	55.1	+	894	—	416	Median
14. Columbus	54.8	+	911	—	560	+
15. Portland, Me.	54.7	+	720	—	665	+
16. Chicago	52.3	+	1110	+	304	—
17. Williamsport	47.9	+	887	—	444	+
18. Louisville (white)	46.7	+	1004	+	173	—
19. Meriden	46.4	+	1056	+	395	—
20. Richmond (colored)	46.3	Median	91	..	478	..
21. Dayton	45.8	—	1034	+	511	+
22. Jersey City	44.7	—	932	Median	246	—
23. New York	42.6	—	592	—	292	—
24. St. Louis	42.3	—	625	—	415	—
25. Cincinnati	41.3	—	223	—	464	+
26. Utica	38.0	—	802	—	411	—
27. Passaic	37.2	—	1100	+	227	—
28. Reading	36.2	—	779	—	243	—
29. Paterson	36.1	—	981	+	282	—
30. Philadelphia	32.4	—	528	—	215	—
31. Wheeling	31.3	—	950	+	249	—
32. Woonsocket	30.0	—	1056	+	353	—
33. Baltimore	29.3	—	819	—	347	—
34. Newark	28.0	—	1063	+	211	—
35. Hoboken	27.3	—	1002	+	290	—
36. Erie	27.1	—	728	—	304	—
37. Wilmington (col.)	26.4	—	895	—	537	+
38. New Orleans (white)	25.5	—	918	—	286	—
39. Camden	17.3	—	925	—	220	—

In the third column the median is Jersey City with 932 children at the age of six. The relations of the records of the other cities to the median are shown by the plus and minus signs in the fourth column. Among the cities in the upper half, twelve have more than the median number of children in school at six, and seven have less. The median itself, seven cities marked plus, and eleven marked minus are found in the lower half.

It is evident that there is little correlation here between those beginning school early and those continuing to the highest grade. If all of the cities making poor showings as regards survivors had few children in school at the age of six, and all those making good showings had many at that age, we should conclude that age at starting was the deciding factor. As it is we can see little relation between the two.

The fifth column shows the pupils remaining to the age of fifteen. Here the median is New Brunswick with 416.

The sixth column shows by the plus and minus signs that in the upper half of the table we have the median itself, fifteen cities having more than the median number of children at fifteen and three having less. In the lower half of the table there are three more and sixteen less.

Here the result is as conclusive as it was inconclusive before. The cities with badly shrunken final grades are the cities which do not retain many children to the age of fifteen. Those with large final grades are the ones that succeed in keeping their children in large numbers to that age.

Note: These relationships may be more correctly determined by computing the mathematical correlations between the first and second groups and the first and third groups. A perfect correlation is mathematically expressed by 1 and a less perfect correlation by some high percentage of 1, as .85 or .90; a low correlation by a small per cent, as .20 or .25; negative correlations, by minus quantities varying in the same way from 0 to -1.

In the case in point the index of correlation may be simply and quickly obtained by reference to one of Pearson's simpler formulas modified by Dr. Guy Montrose Whipple of Cornell University. According to Pearson

$$r = \sin \frac{\pi}{2} \cdot \frac{\sqrt{ad} - \sqrt{bc}}{\sqrt{ad} + \sqrt{bc}}$$

Now this formula may be brought into a more convenient form if we replace the sine by the cosine of its complement.

All of the foregoing will be rendered plainer by referring to Diagram XXXIV.

In the upper of the three divisions the shaded portion represents the percentage of pupils in each city retained to the final elementary grade. In the second division the shaded columns represent for the same cities in relative figures the number of children in school at the age of six. It is plain that there is no close correlation between the number of children at the age of six and the per cent of children retained to the final elementary grades. In this division of the diagram some of the columns are long, some short, entirely irrespective of the number of survivors in the final grade. In the third division of the diagram the shaded columns are proportionate to the relative figures representing the number of children in school at the age of fifteen. Here we see a general correlation between the number of children at the age of fifteen and the percentage of children retained to the final grade.

The cities on the left of the diagram having large final grades are the cities which have many children in school at fifteen years of age. Those at the extreme right, which have small final grades, have few children at the age of fifteen. While there are several exceptions it is evident that there is here a distinct correlation.

$$r = \cos\left[\frac{\pi}{2} - \frac{\pi}{2}\,\frac{\sqrt{ad} - \sqrt{bc}}{\sqrt{ad} + \sqrt{bc}}\right]$$

which we can reduce to

$$r = \cos\frac{\sqrt{bc}}{\sqrt{ad} + \sqrt{bc}}\,\pi$$

If now we further simplify by substituting for the square root of the product of the b and c cases the percentages of cases with unlike signs (U), and for the square root of the product of the a and d cases the percentages of cases with like signs (L), we obtain Sheppard's formula:

$$r = \cos\frac{U}{L + U}\,\pi$$

The results of this formula do not differ appreciably from the foregoing as the value of the fraction is virtually identical.

Now, since L+U must always equal 100, and since $\pi = 180°$ this formula may be written for greater convenience,

$$r = \cos U\ 1.8°$$

By applying this simplified method to the data in question we have as the correlation between the first series and the second .338 which is a very low correlation. Again performing the computations for the first and third series we have as the result .844 which is a very high correlation.

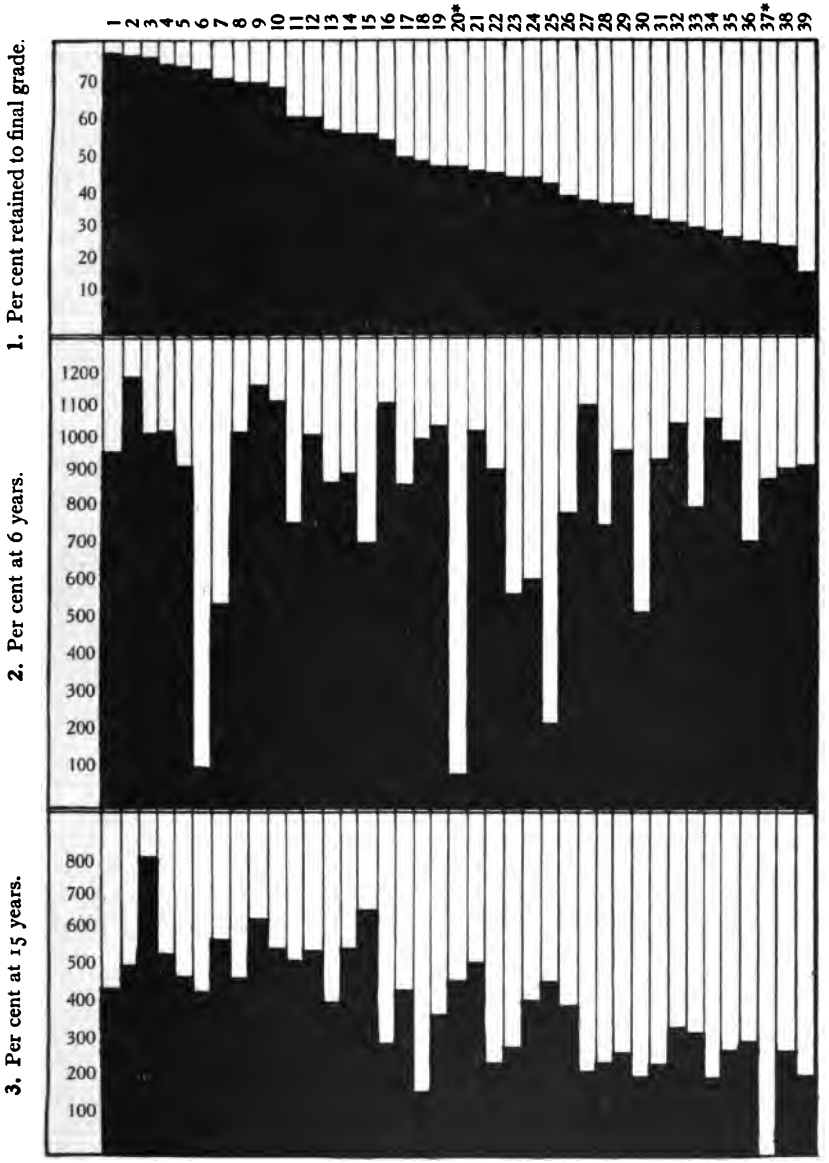

Diagram XXXIV.—(1) Per cent retained to final grade in 37 cities compared with (2) per cent of beginners present at 6 and (3) per cent present at 15. Low correlation between (1) and (2). High correlation between (1) and (3).

(*) Colored schools.

The lesson of this is that retention at the upper ages, not age at starting, is the deciding factor in obtaining for a city a large percentage of survivors in the highest grades. Why this should be so is not at first sight apparent. Most of our school courses are arranged on the supposition that a child will complete the elementary grades in eight years. If he starts at the age of five and is regularly promoted he will graduate at the age of thirteen. Beginning at six he will finish at fourteen, and so on. Thus it would seem that the way to insure a large number reaching the final grade before the characteristic exodus at fourteen would be to have them start early. And yet our figures show that age at starting is not the controlling factor.

Light is thrown on this seeming paradox by studies made of the school records of pupils in the schools of the city of New York. Complete transcripts of the school histories of 269 eighth grade pupils who were about to graduate were secured. Comparing the ages at starting in the first grade and time taken to complete the course the following facts were disclosed:

TABLE 94.—AGE AT STARTING, TIME IN SCHOOL AND AVERAGE AGE OF 269 EIGHTH GRADE PUPILS IN NEW YORK CITY.

Age at Starting	*Number*	*Average Number of Years Taken to Complete 8 Grades*	*Age at Graduation*
Under 5	12	9.62	14.62
5 to 6	64	8.86	14.36
6 to 7	113	8.61	15.11
7 to 8	54	8.44	15.94
8 to 9	19	8.18	16.68
9 to 10	7	7.21	16.71
Total	269	8.61	15.23

In studying this table it must be remembered that it represents survivors only. The third column shows plainly that those who make rapid progress through the grades are pupils who started at comparatively advanced ages. Those who make slow progress are the pupils who begin young. On the other hand it must be

remembered that most of those who start late never reach the highest grades at all. They drop out on the way. Those who start young take more than normal time to make the journey but still they have time to arrive at the finish. The facts of the table are graphically shown in the following diagram:

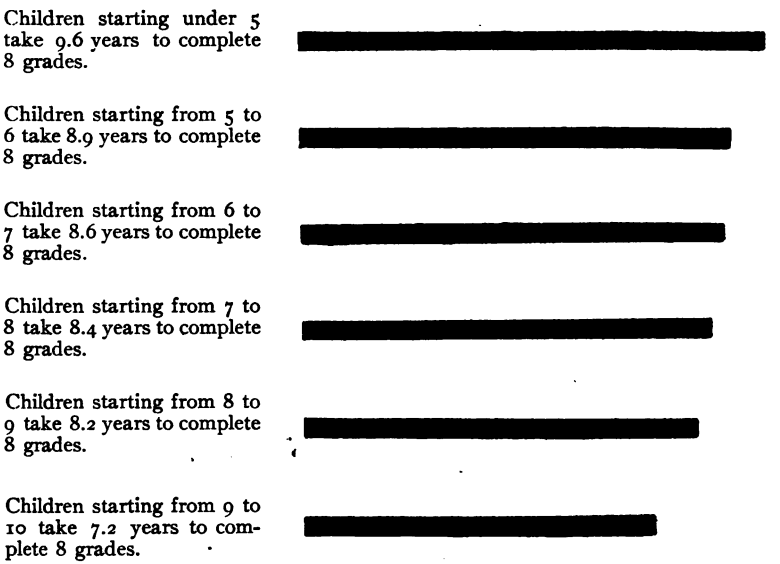

Diagram XXXV.—Age at starting and time in school of 269 eighth grade pupils in New York City.

On account of the educational significance of the facts disclosed by the study of the school histories of the eighth grade pupils, a further investigation was made of the records of 967 fifth grade pupils. The facts as to age at starting and time in school are as shown in Table 95.

Not only is this corroborative of the former set of results but it introduces some new points of interest. In the table of eighth grade pupils it will be noted that the latest age at starting given is ten years. Here we note that a few started even as late as twelve years of age. No matter what their rate of progress these pupils never get as far as the eighth grade. They drop out before reaching it.

TABLE 95.—AGE AT STARTING, TIME IN SCHOOL AND AVERAGE AGE OF 967 FIFTH GRADE PUPILS IN NEW YORK CITY.

Age at Starting	*Number*	*Average Time in School*	*Average Age*
Under 5	27	7.05	12.05
5 to 6	248	6.08	11.58
6 to 7	410	5.92	12.42
7 to 8	173	5.75	13.25
8 to 9	72	5.19	13.69
9 to 10	32	4.85	14.35
10 to 11	4	3.50	13.50
11 to 12	1	3.50	14.50
Total	967	5.86	12.51

In graphic form the same facts are presented below:

Children starting under 5 take 7.1 years to complete 5 grades.

Children starting from 5 to 6 take 6.1 years to complete 5 grades.

Children starting from 6 to 7 take 5.9 years to complete 5 grades.

Children starting from 7 to 8 take 5.8 years to complete 5 grades.

Children starting from 8 to 9 take 5.2 years to complete 5 grades.

Children starting from 9 to 10 take 4.9 years to complete 5 grades.

Children starting from 10 to 11 take 3.5 years to complete 5 grades.

Children starting from 11 to 12 take 3.5 years to complete 5 grades.

Diagram XXXVI.—Age at starting and time in school of 967 fifth grade pupils in New York City.

In this table it is again shown that the fastest progress has been made by those who started late and the slowest by those who started early.

In spite of their importance none of the features mentioned as worthy of note in these two sets of results has the educational significance that attaches to another fact which they show. This is, that the average time taken by pupils who start at the usual ages or younger is more than the normal time for doing the grade work. This makes it difficult or impossible for them to finish by the time they are fourteen. The average time taken by pupils who start to school late, while somewhat abbreviated, is still so much that they too find it difficult or impossible to reach the final grade at the age of fourteen.

The reason why retention at the upper ages and not age at starting is the controlling factor in securing a large percentage of survivors is that our school courses are too difficult to be completed in eight years by the average child who starts at the age of five, six or seven, and our systems of grading are too inflexible to permit the more mature child to make up the handicap he is under through late start. Thus, no matter whether children start early or late a large part of them will have to remain to the age of fifteen or sixteen in order to graduate.

We may summarize our conclusions as follows:

1. Age is the important factor in all studies of elimination.
2. Cities differ widely both in respect to attracting children early and keeping them when they are older.
3. Retention at the upper ages, not age at starting, is the controlling factor in elimination.
4. Children who make the most rapid progress through the grades are those who start late and those who make the slowest progress are those who start early.
5. Most of the children who start late never graduate. Those who start early are the ones most likely to finish.
6. Our school courses are too difficult for the immature child and too long for the mature one.

CHAPTER XVI

ARE CONDITIONS IMPROVING?

ONE of the results of the recently awakened interest in retardation has been the assumption on the part of many people that the evil itself is one of recent growth in our schools. To some degree this conclusion has resulted from the present agitation in favor of vocational instruction in the grades. The advocates have pointed to recent economic and social trends of society as enforcing their arguments for vocational training, and they have also given prominent place to retardation, and its consequent evil, elimination, as constituting further reasons in support of their pleas. This has resulted in enforcing the natural assumption that retardation is an educational evil of recent development.

Under these conditions it becomes worth while to examine into the truth of this assumption and to discover whether retardation is increasing or decreasing in seriousness; and, if the latter be the case, if the decrease is rapid enough to warrant us in feeling that the matter will take care of itself if no further attention be paid to it.

The data upon which to base such an investigation are neither easily secured nor abundant. Among the cities of the country six have been publishing age and grade distributions for a considerable number of years. From these tables we may compute the percentages of retarded pupils in each city and compare recent conditions with those of former years.

The conditions disclosed are not very conclusive. In Boston the percentage of retardation has fluctuated, but there seems to be some indication of slight improvement. Columbus seems to show no decided change in the twelve years. Kansas City shows decided improvement. The result in Los Angeles is negative. Portland shows steady improvement, and Springfield continued and decided improvement. The general tendency, as expressed

by the averages at the foot of the table, is one of general progress toward better conditions with no advance in the last five years.

TABLE 96.—PER CENT OF RETARDED PUPILS IN SIX CITIES FOR A SERIES OF YEARS.

City	1895–6	1896–7	1897–8	1898–9	1899–00	1900–1	1901–2	1902–3	1903–4	1904–5	1905–6	1906–7
Boston .	22.1	21.3	19.1	19.3	24.3	23.8	16.2	15.5	20.3	14.2	19.9	18.5
Columbus	37.5	34.6	33.2	31.7	30.6	29.8	31.3	29.7	34.9	38.4	37.2	37.3
Kansas City, Mo. .	57.5	58.7	52.9	53.1	51.2	48.7	48.9	48.2	49.2	49.8	49.6	48.5
Los Angeles	..	38.5	37.6	35.8	35.1	36.6	36.0	36.1	38.3	..	..	..
Portland, Ore. .	..	..	..	..	37.6	38.6	38.7	28.3	30.1	29.8	29.6	30.7
Springfield, Mass. .	42.5	43.4	41.9	41.0	35.2	31.6	30.6	27.5	27.6	26.2	24.2	23.2
Average of the percentages.	39.9	39.3	36.1	36.1	35.7	34.8	33.6	30.9	33.8	30.9	32.1	31.6

On account of the meagerness and unsatisfactory character of this evidence further data of another sort have been compiled. These consist of computations of the percentage which the membership of the grades from the kindergarten to the fourth grades of different city school systems are of the entire membership of all of the elementary grades. These figures have been secured from forty-seven cities. In general they cover a period of twelve years, although in several cases the information is lacking for some of the years. Although but forty-seven cities furnish these data there are fifty cases, for we have figures from three of the cities giving the information separately for the white and colored pupils.

Out of the fifty cases, fifteen show a higher percentage in the final year than in the first one. The other thirty-five show decreases. The figures at the bottom of the table giving the averages of the percentages show a gradual decrease from 69.1 in 1895 to 65.3 in 1906, a falling off of 3.8 points in twelve years. This shows that there is a slow but general tendency—which is

TABLE 97.—SHOWING THE PERCENTAGE OF THE ENTIRE MEMBERSHIP OF THE ELEMENTARY SCHOOLS ENROLLED IN THE GRADES FROM THE KINDERGARTEN TO THE FOURTH GRADE IN FORTY-SEVEN CITIES FOR A SERIES OF YEARS.

City	1895–6	1896–7	1897–8	1898–9	1899–00	1900–1	1901–2	1902–3	1903–4	1904–5	1905–6	1906–7
1. Baltimore, Md.	77.7	78.2	76.8	75.5	76.9	76.1	75.5	75.2	74.5	74.4	74.3	73.3
2. Boston, Mass.	60.0	59.1	60.1	59.6	61.2	60.8	59.8	59.6	60.1	58.7	59.4	58.6
3. Bridgeport, Conn.	71.3	..	..	..	72.9	..	..	75.2	75.5	76.2	72.5	72.4
4. Brockton, Mass.	59.7	59.0	58.1	57.8	57.2	56.9	56.0	54.3	54.2	52.1	53.9	52.5
5. Buffalo, N. Y.	65.7	67.5	67.4	66.0	64.9	63.1	63.1	62.5	62.8	62.5	61.2	62.1
6. Camden, N. J.	..	..	..	..	..	74.3	76.0	78.2	78.3	78.1	78.0	78.3
7. Chicago, Ill.	70.4	69.2	68.9	68.0	68.3	68.6	68.5	68.6	67.3	65.8	64.8	..
8. Cincinnati, O.	..	..	69.3	..	68.5	..	..	..	67.7	67.1	..	66.8
9. Cleveland, O.	68.1	68.5	68.4	68.6	68.0	68.0	68.0	67.6	66.7	65.5	65.4	66.0
10. Columbus, O.	64.1	63.1	61.8	62.2	62.8	63.5	62.9	62.2	62.6	62.2	62.8	62.8
11. Dayton, O.	67.3	66.8	68.7	68.3	67.6	67.3	65.6	..	67.1	66. 5	67.7	66.9
12. Denver, Colo.	71.3	68.8	69.0	68.6	69.0	68.3	60.7	..	64.8	64.7	63.3	63.2
13. Erie, Pa.	77.0	80.2	79.9	80.1	80.5	80.9	81.3	81.3	..	..	..	..
14. Fort Wayne, Ind.	..	71.6	71.3	69.5	71.0	61.9	61.0	60.1	60.2	60.7	60.1	60.4
15. Houston, Texas	77.1	..	69.9	..	70.5	..	69.7	70.3	71.8	74.6	76.1	76.6
16. Jersey City, N. J.	73.3	73.6	72.4	73.9	74.0	..	73.1	72.3	71.2	70.2	69.2	68.3
17. Kansas City, Mo.	69.8	70.0	73.0	73.2	72.7	72.3	72.5	72.3	72.4	72.5	71.8	71.5
18. Los Angeles, Cal.	..	70.6	70.4	70.1	69.0	68.3	67.9	67.5	67.2	67.1	..	65.8
19. Louisville, Ky. (white)	..	68.2	67.7	67.9	67.5	67.4	66.1	66.2	66.4	65.4	..	..
20. Louisville, Ky. (colored)	..	81.2	79.2	77.7	77.5	76.1	75.7	74.9	76.6	76.7	..	..
21. Lynn, Mass.	..	..	..	..	..	..	58.7	54.8	55.5	54.8	55.0	57.1
22. Milwaukee, Wis.	74.4	73.1	70.1	73.8	73.6	73.5	72.8	72.0	70.7	69.1	67.4	66.7
23. Minneapolis, Minn.	74.0	72.0	72.6	74.1	71.1	70.0	69.2	68.2	66.7	64.4	63.5	62.1
24. New Haven, Conn.	..	..	..	..	65.3	65.8	65.8	66.4	67.2	66.3	66.4	66.8
25. New Orleans, La. (white and colored)	..	..	..	..	..	..	78.9	78.5	81.0	80.6	80.2	80.3
26. New York, N. Y.	..	..	..	..	..	..	..	..	65.7	62.3	60.7	60.2

TABLE 97.—SHOWING THE PERCENTAGE OF THE ENTIRE MEMBERSHIP OF THE ELEMENTARY SCHOOLS ENROLLED IN THE GRADES FROM THE KINDERGARTEN TO THE FOURTH GRADE IN FORTY-SEVEN CITIES FOR A SERIES OF YEARS.—(*Continued.*)

City	1895–6	1896–7	1897–8	1898–9	1899–00	1900–1	1901–2	1902–3	1903–4	1904–5	1905–6	1906–7
27. Oakland, Cal.	56.1	52.9	53.8	..	57.1	..	..	..	..	..	..	..
28. Omaha, Neb.	66.4	65.7	66.2	66.9	66.0	65.1	63.7	63.5	62.1	61.6	61.1	61.3
29. Paterson, N. J.	73.4	72.0	73.7	73.0	71.3	73.3	..	73.8	74.3	73.3	70.8	69.5
30. Pawtucket, R. I.	75.9	74.4	76.0	74.2	73.6	73.1	70.9	71.0	69.6	68.8	69.1	67.5
31. Philadelphia, Pa.	78.4	77.7	75.9	76.9	76.9	76.3	76.4	75.5	74.1	72.9	72.4	..
32. Portland, Me.	59.3	58.5	58.0	61.8	62.7	..	..	..	..	58.5	60.3	..
33. Portland, Ore.	..	..	..	..	62.4	60.6	58.8	55.8	55.9	54.5	53.0	53.8
34. Reading, Pa.	..	..	..	..	..	..	..	..	..	65.6	65.9	67.3
35. Richmond, Va.	68.8	68.1	67.7	67.2	68.5	70.0	68.2	68.4	66.3	66.1	66.3	68.9
36. Salt Lake City	72.7	71.5	70.1	68.9	67.2	66.8	67.6	67.2	67.6	63.6	64.5	64.4
37. San Antonio, Texas (white)	..	..	..	..	..	..	74.0	74.0	74.2	73.9	73.3	74.7
38. San Antonio (colored)	..	..	..	..	..	..	80.1	80.8	80.8	80.6	80.3	78.2
39. San Francisco, Cal.	..	58.9	57.2	..	..	..	67.7	68.4	..	..	..	..
40. Somerville, Mass.	59.2	59.2	59.2	59.5	59.6	57.7	56.9	55.8	55.4	54.5	54.3	53.8
41. Springfield, Mass.	65.9	66.4	65.2	64.4	62.3	61.3	59.8	58.1	58.6	57.4	56.5	55.3
42. St. Louis, Mo.	80.8	80.8	79.6	79.3	77.4	74.1	72.3	71.2	70.4	69.5	70.1	68.7
43. Trenton, N. J.	72.7	73.0	73.2	..	71.3	..	70.7	..	71.3	..	..	..
44. Washington, D. C.	62.8	62.9	62.9	63.8	64.1	65.0	65.0	64.6	64.5	64.9	64.0	..
45. Waterbury, Conn.	..	..	56.5	58.4	59.0	60.3	61.7	60.3	63.0	62.9	64.2	65.3
46. Wheeling, W. Va.	..	..	..	..	..	..	..	..	69.7	71.8	71.1	71.0
47. Wilkes Barre, Pa.	..	..	..	66.3	..	..	..	65.5	65.6	65.7	..	..
48. Wilmington, Del. (white)	65.5	64.8	68.3	66.3	66.0	65.3	63.2	63.5	59.5	58.2	57.5	58.6
49. Wilmington, Del. (colored)	80.7	77.7	76.8	76.3	78.4	75.9	71.6	73.1	71.2	70.7	69.8	71.6
50. Worcester, Mass.	54.3	54.6	54.4	55.1	53.9	53.1	52.8	55.5	56.2	55.9	56.1	57.7
Averages of percentages	69.1	68.5	68.1	66.6	68.1	67.6	67.5	67.6	67.2	66.2	65.7	65.3

by no means universal—for our cities to increase the relative size of the enrollment in the upper grades as compared with that in the lower ones.

In general we may conclude from such data as we can secure that the percentage of retardation is gradually growing less in our city school systems, and more of the children are reaching the upper grades. These hopeful tendencies are far from being either universal or decided. While they are encouraging they are so inconsiderable in degree as to indicate very plainly that retardation is not an evil which will be self-eradicating if neglected.

CHAPTER XVII

AN INDEX OF EFFICIENCY FOR PUBLIC SCHOOL SYSTEMS

THE most perfect plant for converting the stored up energy of coal into power available for turning machinery in a factory, producing electricity, or driving an ocean liner is far from being ideally efficient. The best type of tubular boiler has a steam-producing power of about 66 per cent of the theoretical potential energy in the fuel consumed. The steam engine delivers about 17 per cent of the power of the steam. The two together when of the very highest type convert into available power about 11 per cent of the theoretic potential energy stored in the fuel. A gas engine makes a better record of about 24 per cent of the theoretic efficiency.

The principles on which such estimates are based and the formulas by which they are computed are thoroughly understood by engineers, and form most valuable measures by which results are compared and new methods checked.

In this country there are perhaps 8,000,000 people engaged in the manufacturing industries. The teachers and pupils in our schools number about 19,000,000. Yet when we turn from the field of applied mechanics to that of educational administration the transition as regards standards and measures of comparison is too often from science, knowledge, and precision to conjecture, opinion and chance.

It has been repeatedly asserted in defense of this condition that education has to do with individuals and character, which are not susceptible of mathematical measure, and not with objects and processes which may be so treated. While this contention has some validity when we consider individuals, it does not hold when we seek to compare school systems. Here where a large degree of comparison and measurement should be possible we

find a deplorable lack of standards with which to work. We know that many children leave school before completing the elementary course. Our schools are over-crowded in the lower grades and contain few pupils in the upper ones, but for how many educations the state actually pays for each one delivered no one knows. Our city superintendents cannot even tell us how many new pupils begin school each year.

These particular features have been emphasized in this discussion, because if they were known for our city school systems we should have the necessary data for comparing the efficiency of the systems in so far as that is outwardly manifested. Specifically:

1. If we can find out how many children *begin* school each year we can compute how many remain to the final elementary grade. Such a factor would show the relation of the finished product to the raw material.

2. The number of beginners tells us of the number of children who under conditions of maximum theoretical efficiency should be in each grade. Hence we may readily calculate the size of the school system under ideal conditions and compare it with the actual size. Pursuing our industrial analogy still further, this gives us the relation of the actual plant in size to the theoretic requirements. This we may call the economic factor.

3. Comparing not theoretical but actual size with the actual not theoretical product, we reach an index of efficiency which will express both the educational and economic results in combination and give us a means of rating different school systems on the basis of efficiency.

To illustrate, suppose we had a factory which instead of utilizing all its raw material (100 per cent) embodied only 50 per cent in its finished product. It appears that the 50 per cent is the measure of its efficiency. But suppose the plant is not economically organized. Suppose that for a theoretical product of 100 per cent it requires an organization represented by 8000 units, but it actually comprises 9000 units, an organization which may be represented by $\frac{9}{8}$ or 112.5 per cent of the standard. What then is its real efficiency? Its plant is $\frac{8}{9}$ as large as it should be theoretically. From the viewpoint of plant then, the efficiency is $\frac{8}{9}$.

But its product is only $\frac{1}{2}$ as large as it should be. From the viewpoint of product then the efficiency is only $\frac{1}{2}$.

Looking at our plant now from the two viewpoints, it is obvious that its efficiency is expressed by the product of these two fractions or $\frac{1}{2} \times \frac{8}{9} = \frac{4}{9} = 44.4$ per cent.

Now suppose these conditions are found not in a factory but in a school system. For each 1000 children who enter only 50 per cent reach the eighth grade. The efficiency from the viewpoint of product is $\frac{1}{2}$ or 50 per cent. Moreover, instead of finding 8000 pupils in the eight grades we find 9000. From the viewpoint of plant the efficiency is $\frac{8}{9}$ or 88.8 per cent. The figure representing the efficiency of the school system is then $\frac{1}{2} \times \frac{8}{9} = \frac{4}{9}$ or, in terms of percentages, 50 per cent. x 88.8 per cent. = 44.4 per cent.

These propositions are stated in full appreciation of the limited possibilities of measurement and comparison in this field. Cities differ as to methods, ideals, courses of study, statistical practice and number of grades. Moreover, designations used in two different cities though alike may not indicate real equality. Eight grades in Massachusetts may not mean at all the same thing as eight grades in Florida. None of these things are or can be taken into account by a numerical index of efficiency. What can be roughly measured, if we can secure the necessary data, is the degree to which the different cities approximate their ideal of furnishing elementary educations, as that is understood in each place, to all the children who enter the public schools. Keeping all of these limitations before us we may proceed to examine our available data.

If we are to find out what proportion of the children entering school remain to the final elementary grade, the first step is to ascertain the annual number of beginners. Since this figure cannot be deduced from an observation of the grade memberships and is not stated in the printed reports, we must compute it from the figures giving the age statistics as has been explained in Chapter V.

By means of this method we can find with approximate accuracy how many children there are in the final grade for each 1000 beginners in all of the cities for which we have age and grade figures. Under ideal school conditions where all of the children

were regularly promoted, none dropped out before finishing, there were no deaths and the population was stationary, it is evident that with 1000 beginners annually we should find 1000 children in the first grade, 1000 in each successive grade up to the eighth and 8000 in the elementary schools. In similar fashion a seven grade system would have 7000 and a nine grade system 9000 children.

In such cases the index of efficiency would be 100 per cent. Suppose now that on the basis of each 1000 beginners we have the following:

TABLE 98.—GRADE DISTRIBUTION IN CLEVELAND IN 1906.

Grade	*Pupils*
First Grade	1877
Second Grade	1319
Third Grade	1389
Fourth Grade	1140
Fifth Grade	1066
Sixth Grade	863
Seventh Grade	619
Eighth Grade	476
Total	8754

Instead of 1000 pupils in the eighth grade only 476 are found there. Instead of 8000 in all the grades there are 8754. It is evident that on the educational side the output of Cleveland's school plant is only 47.6 per cent of what it should be. On the economic side the city is paying $\frac{8754}{8000}$ as much as she should pay to have all the children finish the course. The figure which represents the efficiency of the school plant of Cleveland is then $\frac{476}{1000} \div \frac{8754}{8000}$ or $\frac{476}{1000} \times \frac{8000}{8754} = \frac{3808000}{8754000}$ or 43.5 per cent.

It would now seem that we were ready to proceed to make similar computations for the other cities and compare our results, but two difficulties present themselves. In the first place the number in the final grade is not the only important measure of the amount of education given the children. Two cities may have equal percentages of their beginners continuing to the final grade and still one city may carry far more pupils to the next grade below the final grade than does the other. Such a case is found in comparing Jersey City and Salt Lake City where the membership of the three final grades on the basis of 1000 beginners is as follows:

TABLE 99.—MEMBERSHIP OF FINAL THREE GRADES IN TWO CITIES.

City	*Grade* 6	7	8
Jersey City, 1906, ...	808	545	447
Salt Lake City, 1901	949	709	449

Again, a few cities have seven grades, a great many have eight grades and some have nine grades. It is evident that here we have a new complicating factor. The final elementary grade does not mean the same thing in all places. It is evident that Medford, Massachusetts, makes a much better educational record when she carries 722 out of each 1000 beginners to the ninth grade than does Richmond when she takes 719 (white) to the seventh grade.

My correction for this is an arbitrary one. I take the average of the relative figures expressing the memberships of the seventh grade to the final grade inclusive. This I consider a measure of the number of children being given a substantially complete elementary education each year. Using the average makes for fairness towards those cities which carry a large part of their children to the next to the last grade, and it also favors nine grade systems over eight grade ones and these over seven grade systems.

The several steps in this process of estimating efficiency are as follows:

(1) Secure age and grade figures on the same basis of enumeration.

(2) Find the average of the age groups seven to twelve inclusive.

This is considered the annual number of beginners.

(3) Compute by means of relative figures on the basis of 1000 beginners the membership of the grades and their total.

(4) Find the average of grades seven to final, inclusive (relative figures).

(5) Divide the number of grades times 1000 by the total membership of the grades (relative figures.)

(6) Considering the results of the two preceding steps —(4) and (5)—as percentages, find their product.

The results obtained by performing these operations in the case of 58 cities where we have age and grade figures are as follows:

TABLE 100.—NUMBER OF BEGINNERS, RELATIVE MEMBERSHIP OF GRADES FOR EACH 1000 BEGINNERS AND INDEX OF EFFICIENCY FOR FIFTY-EIGHT CITIES

City	No. of Beginners	Membership of Grades for Each 1000 Beginners — Grades 1	2	3	4	5	6	7	8	9	Total	Index of efficiency
1. Fitchburg, 1907	383	1477	1197	1044	1020	1041	642	991	874	582	8871	82.6
2. Haverhill, 1908	485	1359	1108	1110	1093	1143	1097	1056	900	778	10009	81.8
3. Medford, 1907	384	1224	1094	1037	1170	1138	1110	925	863	722	9287	81.0
4. Quincy, 1908	552	1724	1390	1274	1203	1247	1147	1046	821	..	9855	75.6
5. Newton, 1906	516	1348	1193	1195	1131	1073	1042	887	782	689	9340	75.6
6. Somerville, 1907	1225	1250	1129	1122	1090	1011	980	833	678	643	8736	73.9
7. Malden, 1908	616	1627	1131	1152	1238	1196	1001	933	735	702	9718	73.2
8. Omaha, 1906–07	1607	1497	1180	1137	1205	1214	1082	889	743	..	8951	72.8
9. Aurora, 1908	218	1735	1296	1112	865	792	1227	751	792	..	8573	71.9
10. Springfield, Mass., 1907–8	1047	1494	1287	1225	1166	1148	1011	926	756	566	9582	70.3
11. Wilmington (white), 1905–6	869	1367	1230	1173	1307	1104	1023	829	698	..	8733	69.8
12. Fort Wayne, 1906–7	609	1548	1197	1289	1243	1154	1088	823	770	..	9115	69.8
13. Newport, 1907	348	1263	1114	1027	1068	970	927	804	629	479	8281	69.4
14. Grand Rapids, 1906–7	1379	1732	1181	1176	1119	1107	957	764	764	..	8802	69.3
15. Portland, Ore., 1906–7	1693	1470	1124	1140	1244	1112	1062	900	656	530	9241	67.6
16. Boston, 1906–7	8265	1604	1251	1132	1159	1061	1000	837	637	593	9278	66.8
17. Denver, 1906–7	3062	1663	1208	1247	1303	1163	1121	823	688	..	9221	65.4
18. Richmond (white), 1907	1043	1491	1264	1232	1142	1056	877	719	..	..	7784	64.6
19. Decatur, 1908	474	1706	1242	1297	1320	1073	960	774	..	..	8376	64.6
20. Portland, Me., 1906–7	859	1430	1310	1228	1218	1074	957	795	617	547	9178	63.9
21. Meriden, 1907–8	404	1254	1180	1281	1133	1010	1064	790	624	464	8806	63.9
22. Newark, O., 1908	327	1346	1217	1377	1199	1272	930	820	575	..	8739	63.7
23. Springfield, O., 1907	664	1394	1308	1361	1218	1179	996	813	594	..	8867	63.4
24. Kansas City, Mo., 1906–7	3195	1973	1336	1328	1284	1025	837	674	..	..	7449	63.2
25. Lowell, 1908	946	1711	1450	1173	1209	1108	987	789	666	571	9664	62.8
26. Minneapolis, 1907	4141	2160	1214	1282	1204	1129	1049	871	624	..	9537	62.5
27. Kingston, N. Y., 1908–9	337	2150	1244	1205	1312	1179	974	724	739	..	9530	61.3

28. Williamsport, 1908–9	513	1452	1117	1193	1386	1214	961	813	583	479	9202	**61.1**
29. Louisville, (white), 1904–5	2431	1385	1178	1121	1094	945	728	637	467	..	7560	**58.4**
30. Salt Lake City, 1900–1	1283	1285	1245	1293	1055	1044	949	709	449	..	8034	**57.6**
31. New Haven, 1908	1922	1545	1385	1387	1315	1103	968	764	531	..	9668	**57.6**
32. Columbus, 1907	2163	1710	1177	1311	1376	1152	877	713	548	..	8868	**56.8**
33. Dayton, 1906–7	1214	1196	1205	1293	1237	1113	845	684	458	..	8148	**56.0**
34. New Brunswick, 1907–8	274	2040	1299	1328	996	1040	799	657	551	..	8713	**55.4**
35. Chicago, 1906	2475	1760	1387	1326	1212	1133	911	713	523	..	8964	**55.1**
36. Los Angeles, 1903–4	2893	1969	1205	1415	1203	1121	945	727	497	..	9087	**53.8**
37. Utica, 1906–7	938	1539	1404	1093	1132	1028	859	634	489	380	8562	**52.6**
38. New York, 1907	65298	1370	1244	1229	1178	1057	832	607	426	..	7945	**51.9**
39. York, Penn., 1907–8	711	1578	1248	1259	1211	1175	975	634	471	..	8555	**51.6**
40. St. Louis, 1906–7	7413	1234	1349	1210	1201	1009	704	556	423	..	7689	**50.8**
41. Cleveland, 1905–6	7367	1877	1319	1389	1140	1066	863	619	476	..	8754	**49.9**
42. Cincinnati, 1907	4507	1756	1369	1349	1203	995	812	598	413	..	8498	**47.5**
43. Memphis, 1908	914	2245	1398	1388	1191	873	864	633	428	..	9023	**46.9**
44. Jersey City, 1906	3267	1930	1436	1394	1198	985	808	545	447	..	8747	**45.3**
45. Passaic, 1907–8	712	1919	1514	1336	958	843	547	530	372	..	8024	**44.9**
46. Louisville (colored), 1904–5	490	2476	1474	1321	1150	691	634	487	489	..	8727	**44.7**
47. Trenton, 1903–4	1039	2598	1165	1200	1040	798	748	564	380	..	8498	**44.4**
48. Paterson, N. J., 1907	1894	1681	1380	1277	1251	1080	862	568	361	..	8463	**43.8**
49. Reading, Penn., 1907	1354	1340	1228	1360	1335	1209	723	500	362	..	8061	**42.6**
50. Troy, 1903–4	651	2078	1442	1391	1285	1018	999	615	350	..	9183	**41.9**
51. Richmond (colored), 1907	591	2173	1502	1279	1162	958	669	463	..	..	8208	**39.4**
52. Woonsocket, 1908	305	2504	1667	1517	1491	1010	794	601	444	300	10333	**39.0**
53. Wheeling, W. Va., 1906–7	640	2204	1463	1366	1029	1021	689	502	313	..	8541	**38.0**
54. Philadelphia, 1907–8	18007	1703	1529	1401	1187	968	704	463	324	..	8283	**37.9**
55. Hoboken, 1906–7	1121	1996	1443	1115	1114	998	618	458	273	..	8018	**36.3**
56. Baltimore, 1906–7	7586	1931	1584	1465	1212	881	654	456	293	..	8476	**35.2**
57. Wilmington (colored), 1905–6	106	2810	1537	1339	1244	716	1263	594	264	..	9760	**35.1**
58. Newark, N. J., 1906–7	5084	2039	1476	1410	1252	935	676	426	280	..	8494	**33.2**
59. New Orleans, (white), 1907–8	3058	2276	1590	1430	1165	791	543	393	255	..	8446	**30.6**
60. Camden, 1906–7	1475	2478	1553	1467	1313	882	564	319	173	..	8751	**26.1**
61. Erie, 1901	656	1848	1930	2221	999	687	394	271	..	..	8354	**22.6**

Since the figures giving the grade memberships on which the table is based are not all computed by the same system of enumeration, the final results are not strictly comparable. From about half of the cities we have figures based on the total enrollment. In the remaining cases the basis is average enrollment or enrollment at a given date. The tendency of this difference is to make the lower grades and the total of all grades somewhat larger in the cases where the total enrollment is the basis, and thus to give these cities slightly less favorable ratings than they would receive were enrollment at a given date the basis in all cases. The basis used for each city may be ascertained by consulting the table on page 55.

The fact that the results obtained are based on data which are only approximately on a basis of equality should be borne in mind in making comparisons, especially in the cases of cities where the difference in the numerical ratings is but slight. An interesting comparison is obtained by grouping the cities by states wherever we have two or more cities in one state. There are nine such groups as shown in Table 101.

It would be unprofitable to press these comparisons too closely. They are from a limited number of cities, and in computing the averages equal weight is given to large cities and to small ones. Nevertheless, the results are not without value. If in a broad general way it is shown that the city school systems of Massachusetts develop 75 per cent of their theoretic efficiency, and Pennsylvania and New Jersey show no better results than 43 per cent, it is certainly a matter of deep significance to these latter states.

Another interesting comparison is arrived at by grouping the figures for the great cities. (Table 102.)

No claim of precision is made for these results nor of infallibility for the method by which they were reached. The method itself is not so refined as it could be made by utilizing more of the procurable data bearing on the problem. The factor of the increase of population which always affects grade distribution might be brought in to modify the final figures. Continuation to high schools or differences between the two sexes in continuance in

TABLE 101.—STATE AVERAGES OF INDEXES OF EFFICIENCY.

City	*Index of Efficiency*	*State Average*
New Jersey		
Camden	26.1	
Newark	33.2	
Hoboken	36.3	
Paterson	43.8	
Trenton	44.4	
Passaic	44.9	
Jersey City	45.3	
New Brunswick	55.4	41.1
Pennsylvania		
Erie	22.6	
Philadelphia	37.9	
Reading	42.6	
York	51.6	
Williamsport	61.1	43.1
New York		
Troy	41.9	
New York	51.9	
Utica	52.6	
Kingston	61.3	51.9
Rhode Island		
Woonsocket	39.0	
Newport	69.4	54.2
Ohio		
Cincinnati	47.5	
Cleveland	49.9	
Dayton	56.0	
Columbus	56.8	
Springfield	63.4	
Newark	63.7	56.2
Missouri		
St. Louis	50.8	
Kansas City	63.2	57.0
Connecticut		
New Haven	57.6	
Meriden	63.9	60.7
Illinois		
Chicago	55.1	
Decatur	64.6	
Aurora	71.9	63.8
Massachusetts		
Lowell	62.8	
Boston	66.8	
Springfield	70.3	
Malden	73.2	
Somerville	73.9	
Newton	75.6	
Quincy	75.6	
Medford	81.0	
Haverhill	81.8	
Fitchburg	82.6	74.3

school might be considered. But to complicate the method by such refinements means to put it out of reach of those who are most interested in the conditions it discloses.

TABLE 102.—INDEXES OF EFFICIENCY OF THIRTEEN CITIES.

City	*Index of Efficiency*
1. New Orleans	30.6
2. Newark	33.2
3. Baltimore	34.8
4. Philadelphia	37.9
5. Jersey City	45.3
6. Cincinnati	47.5
7. Cleveland	49.9
8. St. Louis	50.8
9. New York	51.9
10. Chicago	55.1
11. Louisville	58.4
12. Minneapolis	62.5
13. Boston	66.8

The method as it stands is simple, easily understood, and may be applied by anyone. If it has not the exact precision of the micrometer it has a practical applicability comparable to measuring distance by pacing it off.

It is not by accident or through any mere local difference in the method of gathering the figures that New Orleans and Newark show an Index of Efficiency of but little over 30 per cent as contrasted with more than twice that figure for Minneapolis and Boston. There may be fair question whether Cleveland with 49.9 per cent has a better school system than has Cincinnati with 47.5, but there can be no question that the citizens of Medford, which shows a result of 81 per cent, are getting more for their money than are those of Camden with 26.1 per cent.

CHAPTER XVIII

REMEDIAL MEASURES—LEGISLATIVE AND ADMINISTRATIVE

SOME of the underlying conditions and direct causes of retardation and elimination have been discussed. The aim of the discussion has not been merely the pointing out of the different factors as interesting phenomena, but rather their study as parts of a problem which urgently calls for solution. The remedial measures to which we may look to improve existing conditions may be divided for convenience into two groups—the first legislative and administrative, and the second having to do with school records and their use. The present chapter deals with the first of these two groups.

COMPULSORY ATTENDANCE

In final analysis the one condition indispensable to school progress is attendance. In this country, as in all other countries, educational and state authorities are coming to see that compulsory school attendance is indispensable to an enlightened democracy. Moreover, experience teaches that it can be made effective. In Prussia compulsory attendance laws have been in force for two centuries and their effectiveness is shown by the fact that among recruits in the German army only one man in 2000 is illiterate, while among volunteers in the navy only one illiterate is found among each 10,000. Among native white males of corresponding ages in our own country 38 in each 1000 are illiterate.

These figures reflect conditions in respect to our compulsory attendance laws and their enforcement. Thirty-nine states have such laws varying greatly in their requirements and in provisions for their enforcement. In 1900, when the latest national census was taken, there were approximately 8,000,000 children in this country at the ages from ten to fourteen. During the year 80 per cent of the children attended school. Twenty per cent, or about 1,600,000, did not attend school for any period of time long or short.

Conditions varied greatly in different sections of the country. In Haverhill, Malden and Somerville, Massachusetts, from 93 to 95 per cent of the children from ten to fourteen years of age attended school for six months or more during the year. From these figures the records of different localities range downward until we reach Atlanta, Georgia, Birmingham, Alabama, and Joplin, Missouri, with but 66 to 68 per cent of the children at those ages in school as much as six months. These figures will suffice to show the inadequacy of our attendance laws and the lack of uniformity in their enforcement. The first essential to the solution of the problems of retardation and elimination is to have compulsory attendance laws and to enforce them.

But it is not enough to state in the legal enactment that children between specified ages must attend school for a given number of weeks each year. If we are to make sure that all of the children of a community get at least a specified amount of schooling we must secure some sort of agreement between the length of the school course and the number of years of required attendance. Curiously enough this is a point which we, in this country, have overlooked with astonishing frequency. By common consent the minimum amount of education which it is safe to allow our young people is that of the common school course. This is nearly always eight grades in length. Yet in the great majority of cases the years of required attendance are less than eight. Thirty of the thirty-nine states having compulsory laws require fewer than eight years attendance at school.

There is here a curious anomaly. We set up a minimum standard of education which the state deems necessary for its own safety, we pass laws to secure its attainment, and we make the period of compulsory attendance such that the child who enters when he must and leaves as soon as he may, can not by any possibility complete the course. This condition must be changed if we are to do away with elimination. Either children must be taken into school at an earlier age, or they must be kept to a later one, or the school courses must be shortened. Nor is it sufficient that the child's name be inscribed on the roll of some school during the prescribed number of months and years. If he is to

WHEELING PUBLIC SCHOOLS—ATTENDANCE REPORT

Of.....,.....*Year*,.....*School*

School Month Ending	Number School Days	Present	Absent	Number Times Tardy	Number Times Excused	Conduct	PARENT'S SIGNATURE
September							
October							
November							
December							
January							
February							
March							
April							
May							
June							

Parents and Guardians are requested to sign this Report and return it promptly,

Hervey B. Work, Supt. .....*Teacher.*

profit by the instruction furnished he must be actually present in the school room. On this point American parents are too often over-lax and indulgent. Children are allowed to remain away from school on the flimsiest of pretexts, and not seldom the school authorities are blamed when the child who has been repeatedly absent fails of promotion.

Few people realize how potent a power irregular attendance is in reducing the effectiveness of our schools. According to the latest official figures there are enrolled in our common schools about 17,000,000 pupils, yet the average number actually present

---

Ogden Public Schools

Ogden, Utah,.....190

M.....

Your.....

has been absent from school as follows:

.....

.....

for which a sufficient excuse should be given.

.....*Teacher*

(WRITE EXCUSE BELOW)

.....*Parent*

SEE OTHER SIDE

(*Reverse of the Ogden card.*)

Rules Governing Absence and Tardiness

7. Pupils are required in all cases of absence to bring, on their return to school, an excuse in writing from their parents or guardians, assigning good and sufficient reasons for such absence. The only valid excuses for such absence are: (1) Sickness of the pupil; (2) Sickness or death of some member of the family requiring the presence of the pupil at home or making it impossible to send the pupil promptly; (3) Inclement weather, when sending the pupil would endanger his or her health.

8. Pupils must bring written excuse from parent or guardian for tardiness, unless the cause of same be known to the teacher. Two times tardy is equal to one-half day's absence.

9. For violation of any of the foregoing rules the principal may temporarily suspend a pupil from school and thereupon shall immediately inform the parent or guardian of the fact and the cause therefor, and also report the case to the Superintendent. On second suspension of such pupil for the same offense, he shall not be permitted to return without a special permit from the Board.

each day falls short of this figure by more than 5,000,000. As has already been pointed out in Chapter XII such figures as we have indicate that in our cities less than three-fourths of the children are present as much as three-fourths of the year.

It is unreasonable to suppose that the child who does not attend school with reasonable regularity can be regularly promoted. Failure to advance is retardation and the result of retardation is elimination. If these two evils are to be lessened, attendance regulations must be made much more efficient and the coöperation of parents must be secured.

There are several interesting devices which are used in different cities in the endeavor to enlist the interest and aid of parents. In Wheeling, West Virginia, a monthly attendance report (see page 187) is sent to the parents of each pupil to be signed and returned just as reports of standing in school studies are sent in many other cities.

In Ogden, Utah, a notice on which a blank space is provided for writing the excuse, is sent to the parent of any child who has been absent. The card is then to be returned to the school authorities. On the reverse are printed the rules governing absence and tardiness. (See pages 188 and 189.)

Still another card comes from Mansfield, Ohio. It is of special interest because it is nearly, if not quite, unique. It is a small card or ticket which is given to any pupil who has been neither absent nor tardy for a term and it entitles the holder to one half-day holiday. While objections might well be brought against such a device both on the ground that it is an undesirable form of prize giving and because it recognizes so frankly that the reward most prized by the child is permission to be absent, yet the device itself is so unique and suggestive that the card used is here reproduced.

Mansfield, Ohio, Public Schools

This is to Certify that.....
has been neither Absent nor Tardy for the term ending

.....*and is therefore entitled to this public expression of approbation. The holder of this card is entitled to one-half day holiday. When the holiday is taken, the card must be surrendered.*

H H Helter

SUPT.

.....*Teacher.*

THE SCHOOL CENSUS

The first requirement of compulsory attendance is to find out who are the children required by law to attend school, where they are, and how many they are. Present American practice does not usually accomplish any one of these three essentials. Whatever the law may be, the usual practice is to furnish schools and permit parents to send their children if they wish to. Attendance officers are usually appointed, frequently by some other municipal authority than the school department, who are supposed to hunt around for any children of school age who are not in school and discover the cause. It is rare indeed that there is any checking up of children enumerated in the school census with those on the school rolls to discover which ones are not in attendance. In studying the printed reports of school systems the portion which yields the least information is frequently, perhaps generally, the report of the attendance officer.

Most of our states and territories provide by statute for a periodical census of the population of school age. In 1900 the authorities of the United States Census made a study of the school censuses taken during that year and compared the results with the actual enumeration of children made by the federal agents during the same year. In twenty-six states and territories the number of children reported in the school census was less than the number found by the federal agents. The local authorities failed to report more than a third of a million children of school age, the error in some cases being as high as 25 per cent. In seven states the local agents reported a quarter of a million children more than there actually were, the errors of over-statement running as high as 15 per cent.

That the general unreliability of school censuses is recognized by the school authorities is shown by comments of superintendents in their printed reports. This may be confirmed by quoting a few typical admissions:

Detroit—"The results of the census enumeration for several years past has been very unsatisfactory."

Jersey City—"The utter unreliability of these returns renders them, as has been proved, a very unsafe guide."

Cambridge—"School returns show more children in the schools, public and private, than were found by the enumerators."

Syracuse—"The results of the enumeration were totally void of any reliable information."

The inaccuracy of school censuses is a very serious matter, but its seriousness is still further enhanced by the fact that usually the census is a mere enumeration. That it is usually a count only is shown by the fact that commonly only classified totals are printed in the official records, no measure being provided for preserving the individual records or checking them up with the school records. The case of New Bedford, Massachusetts, is typical. In the report of 1908 the following information is given concerning the census of children between five and fifteen years of age in the city.

TABLE 103.—CHILDREN BETWEEN 5 AND 15 IN NEW BEDFORD, MASS., 1908.

	Number
Attending Public Schools	9392
Attending Private Schools	3264
Attending No Schools	1383
Total	14039

The only comment on the surprisingly large number of children noted as not attending any school is that they are "presumably those who are between five and seven years of age and those over fourteen."

There are four striking deficiencies in this census report. In the first place the number of children enumerated is less than the number given for the preceding year despite the fact that New Bedford is a rapidly growing city. Secondly, the number is smaller than it should be, judging from the figures of the latest United States Census. Thirdly, the number of children reported by the school census as in the public schools is decidedly less than the number actually enrolled in the common schools of the city. Lastly, the number of children reported as attending no school is so large that it can not possibly be made up of the children between five and seven years of age and those over fourteen.

Attention is called to these features of the New Bedford school census, not because that city is any worse off in this respect

than other cities, but because it is typical of most American cities. School census figures are usually unreliable, they are rarely used as a basis for judging educational needs and policies and it is seldom that they are carefully analyzed.

In respect to enforcing attendance we are no better off. Take for instance the case of Milwaukee. According to the report of the City Superintendent for 1907 that city has nearly 50,000 children between the ages of seven and fourteen. All of them ought to be regular attendants at some school. Yet the figures show that there are from 4000 to 5000 children from seven to fourteen years of age either not in school at all or present only a part—in many cases a small part—of the time during which by law they are required to attend.

To look out for such cases the city has three attendance officers who also are required to attend the free public evening lectures and to investigate the cases of applicants for free books furnished to indigent pupils. Is it any wonder under such conditions that truants are numbered in Milwaukee by thousands? And yet this case is by no means extreme among American cities. If we are to have regular school attendance by all pupils our attendance departments must be reorganized and made efficient.

FLEXIBLE GRADING

Ever since its beginning the system of graded schools has been based on the plan that at stated intervals, usually of a year, a reclassification of the pupils takes place, the brighter ones being promoted, those less bright remaining where they are and a few very backward ones being "demoted" into the grade below. This process has been bitterly attacked and condemned as the "lock-step" in education. In the previous chapters it has been shown that this term is a misnomer. There is no "lock-step" in the progress of pupils through the typical American city school system. What we do find is a system by which the brighter pupils move forward at the rate of a grade a year, the exceptional pupil sometimes gains a year and the average and dull pupils fail repeatedly.

The first step toward mitigating the bad effects of failure is the system of half yearly promotions by which the pupil who

fails has only to repeat half a year's work instead of that of an entire year. There is little doubt as to the desirability of this plan. It is in successful operation in dozens of cities and is rapidly spreading, but it is a matter for surprise that it is still rather the exception than the rule.

There are a number of other plans designed to introduce flexibility of grading. As yet there has not been accumulated sufficient evidence to permit of judgment as to their relative advantages, or indorsement or condemnation of any one of them. It seems worth while, however, to describe several of them. One plan designed to introduce flexibility is that commonly known as the "Batavia system" by which the teacher gives part of her time to class work and part to individual work. The object here is not so much to provide for varying rates of progress by the pupils as for varying amounts of teaching according to the ability of the pupils. It is rather a plan to bolster up the slow pupils than to hurry on the quicker ones. In some places this plan calls for two teachers in one room, one of whom is responsible for class instruction, and the other for the individual work.

Both rapid advance for the brighter pupils and special attention for the slower ones are provided by what is known as the Cambridge plan which is described in the following extract from the report of 1907 of Cambridge, Massachusetts:

"In the grammar schools, special teachers are appointed to help such pupils as seem able to do the work in less than six years, and to aid those who without personal instruction would require more than six years. This action of the committee removes the most serious objection to the graded system of schools.

"The course of study is divided in two ways: (1) into six sections; (2) into four sections; each section covering a year's work. Pupils taking the course in six years are classified in six grades, called the fourth, fifth, sixth, seventh, eighth, and ninth grades. Those taking it in four years are classified in four grades, called grades A, B, C, and D. When pupils are promoted to the grammar schools they begin the first year's work.

"One division advances more rapidly than the other, and during the year completes one-fourth of the whole course of study. The other division completes one-sixth of the course.

"During the second year the pupils in grade B are in the same room with the sixth grade. At the beginning of the year they are five months (one-half the school year) behind those in the sixth grade. After two or three months grade B is able to recite with the sixth grade, and at the end of the year both divisions have completed one-half the course of study—the one in two years, and the other in three years. The plan for the last half of the course is the same as for the first half, the grades being known as the seventh, eighth, and ninth, in the one case, and as C and D in the other.

"There are also two ways of completing the course in five

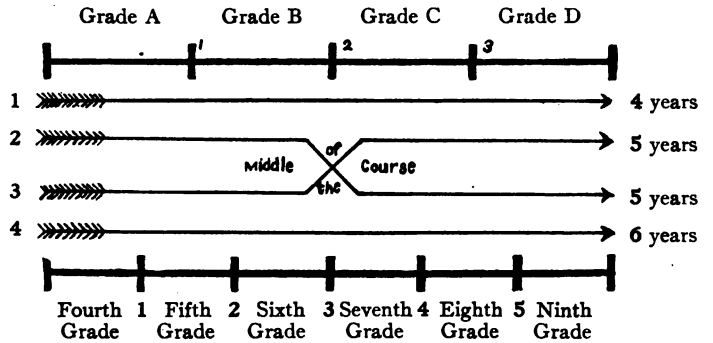

Diagram XXXVII.—Arrow No. 1 indicates the four years' course; grades A, B, C, D. Arrow No. 2 indicates one of the five years' courses; grades A, B, 7, 8, 9. Arrow No. 3 indicates the other five years' course; grades C, D, 4, 5, 6. Arrow No. 4 indicates the six years' course; grades 4, 5, 6, 7, 8, 9.

years: (1) any pupil who has completed one-half the course in two years may, at the end of that time, be transferred to the seventh grade, and finish the course in three years; (2) any pupil who has completed one-half the course in three years may, at the end of that time, be transferred to grade C, and finish the course in two years. In both cases these changes can be made without omitting or repeating any part of the course.

"During the past thirteen years more than 45 per cent of the pupils entering the high schools from the Cambridge grammar schools did the work in the grammar schools in less than six years, 36.1 per cent doing it in five years, and 9.3 per cent in four years.

"It does not follow, however, that because so many did the work in less than the full time that the plan is a good one. Its value is shown, rather, by the thoroughness with which the work has been done, not in one year only, but in a series of years. The results of the first year's work in the high schools would seem to be a test of this thoroughness. The records in these schools show that for thirteen years the marks of the pupils who were four years in the grammar schools were higher than were the marks of those who were five years in the grammar schools; and that the marks of those who were five years in the grammar schools were higher than were the marks of those who were six years in the grammar schools.

"It is now sixteen years since the schools were first classified on this plan. During this time nine thousand four hundred fifty pupils have graduated from the grammar schools. Of this number, 7 per cent completed the course in four years, 29 per cent in five years, 49 per cent in six years, and 15 per cent in seven years or more."

Other plans for securing flexible grading are based on having all of the children in a room in one division for the study of certain subjects, and divided into as many as four or five groups in other subjects, and promoting freely in these latter groups as the child shows capacity to go forward. A similar plan is to divide children into groups so that the slow ones will take the essential subjects only and the brighter ones additional subjects as well. Under this plan promotion is based primarily on the essential subjects and the pupils allowed to omit if necessary some of the less essential ones. The prime difficulty here is that educators have so far been entirely unable to agree as to which subjects are essential.

Whatever plan be adopted it is certain that it should provide for the least possible loss of time by the pupil who has failed and is obliged to repeat part of the work. Even more essential is it that educators should find out what few of them now know; that is, how rapidly pupils actually pass through the grades, and where and why they lose time. When each superintendent knows what these facts are we shall no longer have school courses which are too difficult to be accomplished by the average pupil in

normal time and too inflexible to permit the bright pupil to gain time.

SPECIAL CLASSES FOR FOREIGNERS

Hundreds of thousands of immigrants come to our shores each year from foreign countries. The vast majority of them can not speak English. They bring with them children of school age in considerable numbers and these children constitute a serious problem in many of our cities. All too often the school authorities are addicted to the practice of placing a foreign child who cannot speak English, no matter what his age or what his attainments in the schools of his native country, in one of the lower grades and allowing him to remain there until he has picked up English without special instruction. The practice is unjust to the child and the results of the policy are disastrous to the schools. Where foreigners are numerous they aid in congesting the lower grades and many of them on reaching the age of fourteen are unable to qualify for the certificate which is necessary for them to obtain work. The language difficulty is not a serious handicap for the child who hears English in the school and on the street and it is certainly the duty of the school to reduce it to the lowest possible point.

Other cities might well follow the lead of New York, Cincinnati and some other localities in this respect and establish special classes for these children. The action of New York has been especially commendable. In 1906 that city organized special classes as follows:

(1) Classes to afford non-English speaking pupils an opportunity speedily to acquire a knowledge of the English language, classed as grade C pupils.

(2) To accommodate pupils who are soon to be fourteen years of age and who desire employment certificates, classed as D pupils.

(3) To afford over-age pupils of the fifth and sixth grades an opportunity to make special preparation for admission to the 7A grade, classed as E pupils.

In June, 1908, there were nearly 2000 pupils in the C class, 3500 in the D classes and 15,000 in the E classes.

PHYSICAL DEFECTS

In the chapter devoted to physical defects evidence was presented which shows that there is a strong correlation between physical defectiveness among children and failure to make normal progress. This is a field in which our knowledge is as yet but slight and incomplete. The task confronting the new hygiene and the school doctor is a mighty one, but one which is unsurpassed in possibilities for good. As medical inspection is at present conducted in our schools the net result too often consists in piling up statistics as to the sum total of each sort of defect discovered. Moreover, there is usually little or no discrimination between different sorts of defects. The significant and the non-significant are lumped together.

These conditions are bound to change. When medical inspection is administered by school departments so that educational men and women take a real interest in the results of the examinations; when the cases are followed up so as to insure something being done to remedy the conditions discovered; when the school nurse becomes a permanent feature; when we learn to discriminate between significant and non-significant defects, as they do now in Tasmania; and when school doctors learn to tabulate their statistics by age, sex, grade, progress and defects so as to make the figures tell their story; when all of these things come to pass, as they will some day, we shall see as a result a very considerable reduction in the amount of retardation in our public schools.

TRANSFERS

There is conclusive evidence to show that pupils are retarded in their progress by transfers from one school to another. In the New York investigation the records showed 25 per cent more transfers among the retarded children than among the non-retarded children. It is manifest that children are bound to suffer more or less when they leave one school to attend another. In our shifting population such changes are so frequent as to affect a considerable part of the children attending school. It is the manifest duty of school superintendents, principals and teachers

to see to it that just as often as may be the child who transfers from school to school shall proceed in his new class from the point at which he left his studies in the old one. In all such cases it is the child and not the school which should be given the benefit of the doubt.

PROMOTIONS

There is a feeling among school workers, not always or even often expressed, but generally more or less forcibly present, that retardation is a symptom of good schools. There are many teachers and some principals who feel that to promote few of their pupils is a sign that their standards of work are so high that none but the best pupils can attain them. This raises a serious basal question as to the function of the common school. Other things being equal it is evident that of two school systems, that having the larger percentage of retardation would have the higher and more rigorous standards. It is very possible too that it would have the more painstaking and conscientious teachers.

What is the function of our common schools? If it is to sort out the best of the pupils and prepare them for further education in higher schools, then the most rigorous system, with the severest course of study and the lowest percentage of promotions and the highest percentage of retardation is the best system. But if the function of the common school is, as the author believes, to furnish an elementary education to the maximum number of children, then *other things being equal* that school is best which regularly promotes and finally graduates the largest percentage of its pupils.

In respect to the matter of promotions as to all of the other factors discussed in this chapter the fundamental requirements for reform in existing practices are very simple. They are only two. The first is to discover and understand the facts in the case and the second is to put the burden of proof on the school, not on the child. It is the duty of the school to find the child, not of the child to discover the school. Once enrolled the school should carry him along through the grades as fast as he can go, not as fast as he can force it to let him go. If he has defective vision it is the duty of the school to discover the fact.

When his family moves and he has to enter a new school, he has a right to demand that he continue his work where he laid it down, not a grade or two below that point. At the end of the term it is for the school to show cause, if need be, why he should be held back, not for the pupil to show cause why he should be promoted.

CHAPTER XIX

REFORM IN AND THROUGH SCHOOL RECORDS

OUR schools are weakest on the administrative side. Beginning with a teacher in one small room, systems have developed until they have reached vast proportions, but the teacher has still remained the administrative unit. When several teachers have been placed together in one building one of them has been appointed principal. When a city has a number of such schools some principal, either from that city or from outside, is appointed superintendent. It is this course of evolution which has resulted in the weakness of our systems on the administrative side. Until very recent years practically none of those in charge of school systems have had either technical training in educational work or business or office experience of any sort.

School records born of administrative necessity have been installed and continued from year to year with little reference to their real utility. Moreover, the primary records gathered by the room teacher have seldom been collated and interpreted so as to shed light on conditions and needs in the school system. Little or no effort has been made to preserve original records, to reduce duplication, to save time and energy or to secure accuracy and accessibility. Worst of all, different principals and superintendents have introduced isolated and disconnected practices from which significant facts for the whole system can not be deduced. There have been many day books and blotters but no ledger accounts.

If existing conditions are to be bettered and our school systems made more efficient we must have a better knowledge of conditions and their significance. To accomplish this we must have better records.

THE SCHOOL CENSUS

The first essential in a system of compulsory education is to find out who and where the children are who ought to be in school. The means by which this can be accomplished is the school census properly administered. As an instance of what can be done in this direction the census taken in Providence, Rhode Island, is a good example. The report of the Supervisor of the Census, Gilbert E. Whittemore, for 1908 divides the children into five classes as follows:

Class I. Children five years old, only admitted to the kindergarten in the public schools.

Class II. Children six years old, age of admission to public primary schools, but attendance not compulsory.

Class III. Children seven years old and not fourteen years old, the compulsory attendance age.

Class IV. Children fourteen years old whose attendance at school is compulsory unless lawfully employed at labor, or unless the child has completed the course of study of the primary and grammar schools.

Class V. Children fifteen years old whose attendance is not compulsory.

Under each of these classes the total enumeration is given, the enumeration for the preceding year, the number in public, private and Catholic schools, and the number not in any school. All of these facts are also expressed in percentages. Besides this, information is given in each case as to the duration of attendance and the result of the investigation of the cases of children not in any school. Moreover, these records are not mere results of an enumeration of the children. The record of each separate child found by the census agent is checked with the child's record in the school, and records are made on separate slips of the age, grade, nationality and other facts regarding each child.

Another example of an efficient school census comes from Springfield, Massachusetts, where the number of children in the city at each age from five to fifteen is given, together with the number at the same ages in public, private and parochial schools and not attending any school. Although it has not been done in

the case cited, such figures offer an excellent opportunity for showing conditions concerning school attendance and truancy in a city in graphic and convincing form by means of a diagram.

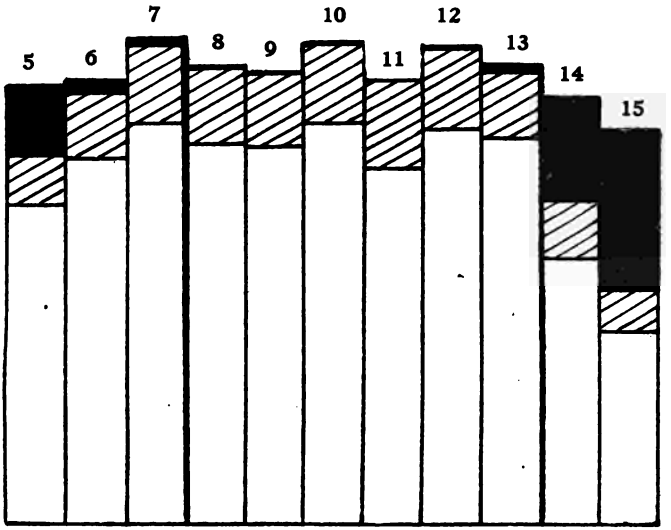

Diagram XXXVIII.—School census results in Springfield, Mass. Upright columns represent number of children at each age; hatched portions the number in private and parochial schools; and black portions number of children not in any school.

In the above diagram each upright column represents the number of children in the city at the given age. The part in outline represents the children in the public school, the cross-lined portion those in private and parochial schools and the black the number not attending any school. The portion between the two heavy upright lines represents the children of compulsory attendance age, from seven to thirteen years inclusive. Springfield's record is a good one. In the compulsory years the heavily shaded portion is very small. Were the facts for many other cities represented in this way the results would be so striking as to constitute a potent force for reforming the department of school attendance.

AGE AND GRADE DISTRIBUTION

The most significant development which has taken place in recent years in the traditional manner of presenting school statis-

tics is the rapidly growing use of grade and age distribution tables by superintendents. Fifteen years ago they had hardly been heard of. Five years ago they were still very rare and when presented were usually printed without comment. Today they form regular features in the annual reports from at least forty cities, and many pages are devoted to interpreting the conditions they disclose.

A large part of the data discussed in this volume has been gathered from these tables and the device itself has been briefly described in Chapter IV. The excuse for taking them up again here for more extended comment is found in the fact that these tables are the most significant and instructive single forms of statistical statement in use by schoolmen and are absolutely basal to studies of retardation.

Superintendents and teachers have always known that the children of any one grade are of varying ages, but only recently have they realized how great the variations commonly are or what they mean. Table 104 on page 205 shows how the children of Springfield, Massachusetts, were distributed by grades and ages in September, 1907.

Looking at the figures for the first grade we see that there were eleven children at the age of four, three at the age of eleven and more than 1500 between these two extremes. This condition is significant from an educational view point. The children of the first grade are of eight different ages, a range equal in years to the time supposed to be required to complete the entire elementary course. The grade does not form at all a homogeneous group. The average age is six and three-quarters years, but work planned for six year old pupils will not be suited to the needs and abilities of a large part of the pupils. In several of the other grades the range is even more, being as high as eleven years in the third grade.

The presence of so many relatively old pupils in these grades is important not alone because they make difficult the planning of work for the classes. In the first grade there are three eleven year old children. If they progress normally they will be nineteen years old when they reach the final grade. But there are no nineteen year old children in the final grade. Children do not

TABLE 104.—GRADE AND AGE DISTRIBUTION IN SPRINGFIELD, MASS., ENROLLMENT IN SEPTEMBER, 1907.

Grade	*Age*															*Total*	*Above Normal Age*	*Per cent Above Normal Age*
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
1	11	361	709	325	106	31	19	3								1565	159	10.1
2		1	189	538	389	151	53	12	11	3	1					1348	231	17.1
3			4	182	450	368	166	72	24	12	4		1			1283	279	21.8
4				6	133	391	338	188	85	56	18	5	1			1221	353	28.9
5					1	95	355	341	192	144	45	24	5	1		1203	411	34.1
6						9	111	333	265	211	101	28	1			1059	341	32.2
7							16	90	293	314	184	60	13			970	257	26.4
8								18	103	251	243	133	38	4	2	792	177	22.3
9								1	18	99	186	155	101	29	4	593	134	22.5
Total	11	362	902	1051	1079	1045	1058	1058	991	1090	782	405	160	34	6	10034	2342	23.3
Under Normal Grade					106	182	238	275	312	426	353	250	160	34	6	2342		
Per cent under Normal Grade					9.8	17.4	22.5	26.0	31.4	39.1	45.1	61.6	100	100	100	23.3		

remain to that age. If they must do so in order to graduate they simply do not graduate. They leave school. The chance of these three children ever reaching the final grade is so small that they have practically no chance at all to do so. Children similarly situated are found in all of the grades. Nor do we need to limit our attention to these extreme cases. It has been repeatedly demonstrated that our children leave school in great numbers at the age of fourteen whatever the stage of their advancement. A child of six in the first grade will be fourteen in the ninth if he advances regularly. Every year added to the age in the first grade reduces enormously his chance of ever reaching the final grade.

These are the considerations which have led educators to adopt for criterion the period from six to eight as "normal age" in the first grade and anything above eight as "above normal age." On the same basis seven to nine is normal age in the second grade, eight to ten in the third, and so on for all of the grades.

Referring now to the Springfield table it will be noted that there is a heavy broken line running through it dividing the pupils of each grade in such a way as to leave the pupils of normal age on the left and the over-age pupils on the right. At the right of the table are three columns of figures, the first giving the total membership of the grades, the second the over-age pupils and the third the per cent which these are of the entire grade membership. In a similar way at the foot of the table are three lines of figures, the first giving the whole number at each age, the second the number below normal grade for age and the third the per cent which these pupils are of the entire group.

Grade and age tables are simply and quickly made from data usually in the records of every school system. The effort required to secure from them significant information is slight. They may be used profitably in different schools and districts within a system for purposes of comparison and should form a valuable basis for selecting retarded children for special attention.

BEGINNERS, SURVIVORS AND REPEATERS

One item which should find a place in the school reports of all city systems and almost never does so, is a statement of the

number of new pupils beginning school each year. If we knew the number of beginners for a series of years we could at once and easily compute the number of repeaters in each grade and the percentage of survivors in the final grade. It is to be hoped that school superintendents will add this item to their lists, for the information is easily secured and most important. If the data had been available a large part of the laborious and cumbersome computation involved in preparing the tables in this volume would have been rendered unnecessary and the results would be much more satisfactory and more accurate.

In the absence of direct information as to the number of beginners the number may be approximated as has been explained in Chapter V by taking the average of the year groups from seven to twelve inclusive. This again is often a product of the age and grade table, for where such a table is printed it gives us the age groups and where it is not printed it is but rarely that we find any statement as to ages. The annual number of beginners in Springfield, Massachusetts, computed by this method from the figures of 1907 is 1047.

If we assume that 1047 is the annual number of beginners in Springfield we can find the per cent of pupils who survive to the final or ninth grade by finding what per cent the ninth grade membership is of 1047. The number in the ninth grade is 593. This number is 56.6 per cent of 1047. Hence we may say that this represents the per cent of beginners in Springfield who survive to the final grade. This is described in the chapter on "Mortality and Survival in the Grades."

The membership in each of the first six grades was greater than 1047. If this number represents the annual number of beginners then in each of the first six grades there must be as many pupils who are repeating as the difference between the grade membership and 1047. The sum of these differences is 1397 which represents the number of repeaters. This is the method described in the chapter on the "Money Cost of the Repeater."

DISTRIBUTIVE RECORDS OF ENROLLMENT AND ATTENDANCE

In Chapter XII dealing with irregular attendance attention was invited to the relatively valueless character of present methods

of recording attendance and enrollment in so far as the question of measuring persistence is concerned. Instances were cited of cities which print tables showing the true character of attendance and from those tables valuable information was secured.

When our superintendents adopt this form of record interpreting a great step forward will have been taken. Take for instance the case of Springfield, Ohio, where the attendance records are printed both in the ordinary way, showing the total enrollment, average attendance and per cent of attendance, and in a distributive table, showing the persistence of attendance. The data presented in the ordinary way for 1907 are as follows:

TABLE 105.—TOTAL ENROLLMENT AND AVERAGE ATTENDANCE, SPRINGFIELD, OHIO, 1907.

Total enrollment	6537
Average attendance	5366
Per cent of average attendance	82.1

There is nothing either surprising or illuminating about these figures. The showing is a good one as such records go, and would not naturally spur the school authorities on to further investigation or study. But when the same facts are presented in the distributive table the results are quite different.

TABLE 106.—SHOWING THE NUMBER OF PUPILS ATTENDING FOR DIFFERENT NUMBERS OF DAYS. SPRINGFIELD, O., 1907.

Days	*Pupils*
184	440
180 to 184	1136
170 to 180	1725
160 to 170	881
150 to 160	518
140 to 150	313
130 to 140	230
120 to 130	167
110 to 120	116
100 to 110	119
Fewer than 100	892
Total	6537

According to the table 892 of the pupils attended less than 100 days. That is, in general terms they were present less than half the time. Here at once we have nearly 900 pupils who can have no hope of promotion. They are nearly 14 per cent of all the

pupils. If in a similar way we consider that those present less than three-fourths of the time can not hope for promotion we find that the group includes more than 1500 or nearly a quarter of all of the children. In short, the table reveals conditions of the utmost importance which are entirely concealed by the attendance records in common use. Moreover, these distributive tables are not purposed merely as additions to the methods now employed. They may well be substituted for the old methods. Careful comparison has shown that if the teachers will merely report the number of children who have attended during the year from no days to ten days, from ten to twenty days, from twenty to thirty days, and so on up to the number present every day, the average attendance as calculated from these figures will not vary from the true average attendance calculated in the present laborious fashion, which takes into account every half day's absence, by more than a fraction of one per cent.

The same holds true for enrollment. All of the records dealing with the number of children on the rolls and the number present can be much more easily kept and rendered many fold more valuable by using the distributive method of statement. Nor is it only in this field that this form of record is valuable. We have already considered its utility in the matter of grades and ages. In showing conditions as to such matters as cost, nationality, physical defects, time in grade, age at entering, etc., distributive records are equally desirable. In all of these fields the form of statement by averages is apt to be both misleading and non-significant and should almost always be supplemented by the distributive statement.

PUPIL'S CONTINUOUS RECORD CARD, NEW YORK CITY

In the present practice of most school systems little or no attempt is made to preserve a continuous history of the individual pupil. The records for a series of years are contained in the registers, but these are renewed each year or term, and in a large school it is in practice almost impossible to trace back the history of any pupil through a series of years.

In an article in Volume VII of *School Work*, Mr. George H. Chatfield, principal of Public School Number 51 of New York City

describes the record card which has just been adopted for use in the New York schools, and outlines the stages of record evolution which have led up to it. Mr. Chatfield tells us of the great western corporation manufacturing the major part of the stoves used in that section of the country. The history of each stove placed on the markets forms part of the company's records, and this system is held by the founders of this great business to be the true cause of its great and lasting prosperity. From the raw material to the finished product each part is accounted for, each workman's responsibility recorded, and the results of each inspection are noted. That such methods are not unique is shown by the fact that most prosperous shoe concerns have similar plans by which they can ascertain the details of the shop history of each pair of shoes manufactured. The schools of our country have passed and are passing through a development as marked as that of the business world. The educational records of fifty years ago are as out of place today as the quill pen and letter press which once held sway in the counting room.

The New York card may be taken as embodying the best and latest thought in the development of continuous records for pupils. It is a card designed to contain in summarized form the significant school history of the individual pupil. It is 5 x 8 inches in size; in color it is blue for boys, and white for girls. The plan is that these cards shall be made out in duplicate for the entire school and new cards added for any new pupils admitted. One set of cards is filed alphabetically and one by classes. At the end of each term the teachers enter the records for their pupils on the cards and indicate the new class to which the pupils are to be transferred or promoted with the date of change. The cards are then distributed among the teachers for the ensuing term according to promotions. Original data for the new roll book entries are taken by each teacher from her cards thus reducing the probability of error. After the changes have been made and recorded all of the new data which have been added are entered on the duplicate card in the alphabetical file.

It is worthy of note that peculiar conditions in New York City have necessitated an amount of refinement of detail on this card which would be entirely unnecessary in most smaller towns

DEPARTMENT OF EDUCATION. **PUPIL'S RECORD.** **CITY OF NEW YORK.**

Name _____ Born _____ Emp. Cert. No. _____

Family Given Mo.–Da.–Yr.

Parent _____ Special Aptitudes _____ 7B Geog. | | | | | |

Attended _____ days from 13th birthday to end of term _____

No.	Street	Fl.	No.	Street	Fl.	No.	Street	Fl.	No.	Street	Fl.	No.	Street.	Fl.

School	Bor.	Date ent'd	Class	Present	Abs.	Late	Con.	Wk.	Not proficient in	School	Bor.	Date ent'd	Class	Present	Abs.	Late	Con.	Wk.	Not proficient in
		Mo.–Da.–Yr.										Mo.–Da.–Yr.							

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and cities. It is an interesting evidence of the shifting character of the population that spaces have been left for twenty changes of address. The size of New York's apartment houses is reflected in the spaces left for recording the number of the floor on which the pupil lives. The frequency of transfers is shown by the fact that although there are but eight grades, each one divided into two sections, spaces have been left on the card for thirty-two entries.

While the New York card allows for a greater number of changes of address and transfers than will be found necessary in almost any other locality, other existing continuous record cards, almost without exception, err in not allowing for enough flexibility in these regards. Among thirty-five record cards from as many cities which have been carefully studied there are but few which fulfil even the most fundamental requirements for such a record. This fact bears testimony to the recent growth of the realization of the necessity for such records. Most of the cards now in use are products of the past two or three years and have not yet been modified by the teachings of experience.

To be satisfactory a continuous record card must be large enough to contain all of the data necessary for recording the significant facts in a child's school history during the entire elementary course. It should not have part of the record on the reverse side if this can be avoided. It should be of one of the three standard sizes, viz., 3 x 5 inches, 4 x 6 inches or 5 x 8 inches. It should allow for several changes of address and for transfers from school to school. It should be so arranged as to reduce to a minimum the possibility of misunderstanding it. Lastly, the unit under which entries are to be made should be the school year and not the grade. This is because in tracing a child's school history what we want to know is where he was and what he was doing during each year subsequent to his first beginning until the time he left school. If the record is entered by grades and we find that he was in grade two in 1903 and in grade three in 1905 we have nothing to tell us whether he was absent in 1904 or repeating grade two.

The following form is offered as filling all of the above conditions. It is designed to be printed on a 5 x 8 card and should be supplied in two colors, one for boys and the other for girls.

NAME	DATE OF BIRTH	PLACE OF BIRTH
Parent's Name	Parent's Occupation	Nationality of Father
Street No.	Street No.	Street No.
Street No.	Street No.	Street No.

Date of Leaving School

Cause of Leaving School

School Year	School	Grade	Date Entered	Weeks Enrolled	Attendance	Scholarship	School Year	School	Grade	Date Entered	Weeks Enrolled	Attendance	Scholarship
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						
19 -19							19 -19						

In this card one line of the record is to be filled out for each school term in systems having semi-annual promotions and one line for each school year in systems having annual promotions. Each time a new school is entered a new line is used. Thus if a pupil does the work of a grade three times there will be three lines filled out and they will tell the story of his repetitions. If he does the work once, is out of school for a term on account of sickness, returns and does the work of that grade again, there will be three lines filled out and again they will tell the story. If a child begins a term in one school and continues it in another, two lines will be filled out for that term, and so on. There are twenty-two lines provided giving ample space for recording the pupil's record in the sixteen half grades and allowing besides for several transfers and repetitions. In a system having annual promotions twelve lines should be sufficient.

TRANSFER CARDS

In most cities the records which deal with transfers are simple in the extreme and often as inefficient as they are simple. The common practice is to give the child who is about to move to another part of the city a transfer card telling what grade he is leaving and sometimes giving a transcript of at least part of his school record. The child takes this card with him and presents it or not at the new school according as his parents are careful or careless about allowing him to lose time before beginning work in the new locality.

The New York investigation demonstrated the fact that there is a close relation between transfers and retardation. It is important that teachers and principals do all in their power to make the loss from this source as small as possible. Good transfer records are one important factor. The essential characteristics are that the child shall have to take with him a card entitling him to be admitted in the new school, that the authorities of the school he leaves have a record of the transfer, and that the principal of the new school have a notification of the fact that the transfer has been given. In many systems it is also regarded as necessary that the superintendent's office be notified.

These requirements mean that there must be three or four

copies of the transfer record. The easiest and most convenient way to allow for this is by means of appropriately arranged forms printed on leaves bound in a book and perforated for separation like the leaves of a check book. By means of carbon paper four copies can be made by filling in the two blanks on one page corresponding to the check and the stub in a check book. Three of these are then torn out and given respectively to the child, the new principal and the superintendent. The fourth remains as a permanent record for the school. This system is used in Waterbury, Connecticut, and there the card sent to the principal of the new school has on it the note, "If the above pupil does not appear at your school within one day notify the truant officer."

CHAPTER XX

RETARDATION AND SOCIETY

THOSE who direct our public schools, more than any other class of people, come into intimate contact with significant social facts. By the nature of their work they are forced to note directly and immediately the results of health and sickness, births and deaths, prosperity and misery, cleanliness and dirt in the city's population. It is for these reasons that through the schools more than from any other single source we should be able to get at the facts which will tell us of obstacles to civic betterment and the results of attempts to remove those obstacles.

Reasonable as the assumption may be that the schools should be able to enlighten us along these lines, the expectation that their records will serve us is commonly doomed to disappointment. The reader who has reached this point in the present volume cannot but have been impressed with the utter inadequacy of the data printed in the school reports which have been made the chief basis of the present series of inquiries.

In the present study three questions have been kept constantly in view; namely, What proportion of the children who enter the schools complete the elementary course? At what points in the course do those who fail to finish drop out? What are the causes which impel children to drop out without finishing?

These questions are neither new nor complex, nor unpractical. They bear the very closest relation to the first principles of efficient school administration and yet the facts to answer them are not available in any printed report but must be approximated through laborious computations such as have been explained. One main object of the present volume will have been attained if it has been convincingly demonstrated that we need more and better facts on which to base our judgments as to action in educa-

tional matters. In every line of business it has been convincingly and repeatedly shown that it pays to spend enough money and enough effort to learn the facts about the business. Why should this not hold likewise in the field of education?

We have referred to the case of the stove corporation that regards as its most valuable asset the records which enable it to trace the shop history of each stove from the stage when it enters as raw material to the one when it leaves the factory as a completed article. Attention has also been called to the fact that similar records are kept by the great shoe companies. If the directors of large corporations have found through experience that it pays to know what happened to a stove or a shoe in the process of manufacture, who worked on it, how long it took to complete it, and, if it is in any way deficient, at whose door the responsibility lies, is it not much more the duty of those in charge of training citizens to be able to find out what happened in the course of the education given, when the child entered, how long he spent in each grade, where he progressed slowly and where rapidly, and, if he left school before completing the course, when and why?

Whether or not the assumption that the school can and should learn these facts be a valid one largely depends on what the mission of the common school really is. This has already been dwelt on at some length in a previous chapter. The position taken, which is basal to the viewpoint of the present volume, is that it is the mission of the common school to give as large a proportion of the children of the community as possible a complete elementary education. If this assumption is not valid then the study of retardation and elimination and the problems of individual record keeping have little value.

If, however, the assumption be a valid one, then the matters which have been treated assume at once a distinct and striking importance. This is true, not only from the viewpoint of educational economics, which would dictate the accumulation and classification of more and better knowledge about the results of our educational methods and processes, but also from the more directly pedagogical viewpoint of the course of study. The facts which have been reviewed and the conditions disclosed reveal with

startling clearness at least two disquieting characteristics of the courses of study in vogue in our city school systems.

The first is that our courses are not fitted for the average child. They are so devised that they may be followed by the unusually bright pupil substantially as mapped out. The really exceptional child may even advance faster than the scheduled rate but the average child cannot keep up with the work as planned and the slow child has an even smaller chance of doing so.

The second characteristic of our schools as they now exist is that they are better fitted for the girl than for the boy pupils. This is strikingly proven by the figures which have been presented.

The lesson of the facts so briefly reviewed is a plain one. If our conception of the mission of the common school is true then the schools must be in some measure reformed, not only on the administrative side, but also through changes in the course of study and in the methods of teaching. It is intolerable that but a small part of the children who enter our schools should stay to complete them. It is not at all likely that the public at large will long be content to continue to support the schools as at present administered if they once fully realize that those schools are not accomplishing what we have for years assumed that they were. If, then, we are to so guide the rising current of public interest in education that it shall result in wise and constructive action, it is imperative that we evaluate these concrete facts with the utmost care.

We need to know the effects of our elementary curricula by following the effects upon the graduates. What happens under this system and under that? We do not know. We are starting upon a great movement for vocational training. We are moving towards a sort of commercialism in education. It is claimed that a boy who has finished the grammar grades and has had two years' training in vocational work will be able to earn a better livelihood than one who leaves school in the sixth grade and has had no such training. And yet, although we are now expending hundreds of thousands of dollars upon preparations for this new sort of education and are planning to spend millions, the real, concrete, definite facts that can be brought forward in support of the arguments in favor of the new schools are painfully few in

number and unconvincing in kind. The fact is that, despite the hundreds of thousands of trained workers in education and the millions of treasure freely spent each year, we still base our actions in education largely on opinion, guess work and eloquence.

In one city of Michigan the proposition recently gained headway that kindergartens should be established. The advocates of the innovation claimed that many advantages would follow their establishment. Among these claims perhaps the most weighty was that children who have passed through the kindergarten complete the elementary course in less time than do those who have not had the advantage of such training. Those persons who opposed the establishment of the kindergartens denied that this would be a result. In order to settle this very important point the local school authorities wrote to superintendents of schools all over the country in cities where kindergartens form a part of the school system, and asked whether children who have taken the kindergarten course complete the work of the grades in less time than do those who have not had such training. Answers were received from seventy-two cities. Forty-nine answered that they thought that the kindergarten pupils did the work of the grades more rapidly than the others, but that they did not know. Twenty-three cities replied that they held the opposite opinion, but that they did not know.

The illustration is typical of the present status of knowledge in education. We have thousands of kindergartens and spend on them every year hundreds of thousands of dollars, but what the effect of the kindergarten training is no one knows.

If the present work accomplishes even a little toward altering this condition it will not have been in vain. Its main object is to accomplish what it may in the direction of getting schoolmen to think of education in terms of something. What those terms are is not, at least at first, of great importance. What is important is that the old criteria of "good" and "poor" and "striking" and "appealing" make way for quantitative standards of measure and comparison [illegible] which effectiveness and efficiency may be judged.

[illegible]re is one factor which, while of supreme importance, has been [illegible]touched [illegible]n in the present work. That

is the psychological effect of retardation upon the retarded. We have seen that a large part of all the children in our public schools fail to make normal progress. They fail repeatedly. They are thoroughly trained in failure. The effect of such training should be carefully considered, for the problem it presents is a grave one. It does not make much difference what we have to do, whether it is a great thing or a little thing, so long as we feel that it is possible for us and that we can do it if we try. There are few more hopeless things in the world than to have it borne in upon us that we are driving against a thing that we cannot do. Yet this is the sort of training that we are giving a large part of all of our children.

Under our present system there are large numbers of children who are destined to lives of failure. We know them in the schools as the children who are always a little behind physically, a little behind intellectually, and a little behind in the power to do. Such a child is the one who is always "It" in the competitive games of childhood. He cannot jump so far as the other boys, he takes a step more in getting across the street from curb to curb when the boys are seeing in how few steps they can do it. He always falls below; he falls down—he knows he is going to fall.

There is no teacher but will recognize the picture of this boy, and indeed, with some modifications, it fits many girls just as well. These are the boys and girls with whom this book deals. They are not the mentally deficient, exceptionally dull children. They constitute a large part of all of the school children in most, but not in all, of our school systems. These are the children that too many of our schools are confirming in the habit of failure.

Success is necessary to every human being. To live in an atmosphere of failure is tragedy to many. It is not a matter of intellectual attainment; not an intellectual matter at all but a moral matter. The boys and girls coming out of school clear-headed and with good bodies, who are resolute, who are determined to do and sure that they can do, will do more for themselves and for the world than those who come out with far greater intellectual attainments, but who lack confidence, who have not established the habit of success but within whom the school has established the habit of failure.

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